2409

Family Callionymidae

The Dragonets

Body elongated, often transversely oval anteriorly, broader than deep. Head broad, depressed and triangular, profile oblique. Eyes directed upward. Mouth small, protractile, horizontal, lower jaw but little conspicuous. Maxillary concealed, without supplemental bone. Tongue small or obsolete. Teeth small, villiform, in jaws only, none on palate. Preopercle with strong spine at angle. Dorsal spine single each side, before eye. Gill opening very narrow, small, superior. Gill membranes widely joined to isthmus. Gills 4, slit behind fourth. Branchiostegals 5 or 6. Pseudobranchiae well developed. Air

vessel absent. No pyloric caeca. Body and head naked. Lateral line present, often duplicated. Male with external papilliform extension of the genital tube. Two dorsals, occasionally joined basally. Spinous dorsal with 3 or 4 slender flexible spines. Soft dorsal and anal similar, latter without distinct spine. Caudal free, more or less lanceolate. Pectoral small. Ventral larger than and in advance of pectoral, with spine and 5 rays.

Small fishes of shallow and moderately deep water in tropical and subtropical seas. They have long been noted for their sexual dimorphism and handsome coloring. The males have higher dorsal fins than the female

and are differently colored. Eggs pelagic. Barnard says of their courtship and mating: "This is the only known case among the Bony Fishes where there is a definite sexual intercourse followed by the laying of pelagic eggs. As a rule where such intercourse occurs, the fishes are viviparous."

Analysis of genera

a'. Two distinct dorsal fins.

b'. Callionymina. No supraorbital tentacle; body smooth.

c'. Gill opening superior, above opercle; ventral without free ray.

d'. Ventral with last membrane connected to middle of base of pectoral.

e'. Gill opening exposed, superior on cheek; opercular membrane not free posteriorly. f'. Lateral line simple. Callionymus

f². Lateral line jointed. Paracallionymus

e². Gill opening above or hidden by opercle; opercular membrade forms free flap posteriorly. Synchiropus

d². Ventral with last membrane not united with pectoral; gill opening hidden by opercle. Eleutherochir

c². Gill opening behind opercle; opercular membrane without

free lobe; ventral with free ray, posterior part of fin with ventral membrane united to middle of anterior pectoral base. Dactylopus

b. Amorinae. Each eye with long tentacle above; gill opening behind preopercular spine; body spinulose (?). Amora

-a. Draculinae. Only one dorsal, corresponds to second dorsal of other genera. Draculo

Genus Callionymus Linnaeus

Callionymus Linnaeus, Syst. Nat., ed. 10, pt. 1, p. 249, 1758. (Type Callionymus lyra Linnaeus, designated by Jordan, Tanaka and Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 374, 1913.)

(Calliurichthys Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 25, p. 941, May 3, 1903. (Type Callionymus japonicus Houttuyn, designated by Jordan, Tanaka and Snyder, op. cit., p. 372.)

Callionymus Lyström, Bih. Svenska. Vet.-Akad. Handl. Stockholm, bd. 13, afd. 4, no. 4, p. 36, 1887. (Type Callionymus lyra Linnaeus.)

24/4

Yeruticus Whitley. Records Australian Mus., vol. 18, No. 3, p. 115, March 25, 1931. (Type Calliomymus aprinus Mc Culloch, orthotypic.)

2415

Callionymus affinis Regan

Callionymus affinis Regan, Trans. Linn. Soc. London, ser. 2, vol. 12, Zool., p. 248, May 1908 (type locality, Maldives, N. Milandu, in 30 fathoms).

Head 3 4/5. Gill opening 3 4/5. Eye 2 4/5 in head, eyes contiguous; maxillary extends nearly to vertical from anterior margin of eye; preopercular spine straight, with serrated inner edge and an outer antrorse extension at base; occipital region rugose, not covered with skin. Gill opening small, superior.

Lateral line single.

D. IV, 9, first dorsal in male elevated but with spines scarcely produced; second dorsal rays equal, last reaching caudal when laid back; A. 8, rays increasing

Butirinus glosodonta Lay and Bennett, Voy. Beechey, Zool., 1839, p. 46 (Oahu).

Albula glossodonta Steindachner, Denkschr. Akad. Wissl. Wien, vol. 70 1901, p. 513 (Honolulu).

Albula glossodon Günther, Journ. Mus. Godeffroy, vol. 8, pt.16, 1909 p. 385 (Society Is.; Hawaiian Is.).

Esox argenteus Lichtenstein, Descript. Animal., Forster, 1844, p. 19 (Tahiti).

Albula erythrocheilos Valenciennes, Hist. Nat. Poiss., vol. 19, 1846 p. 254, pl. 540 (type locality, Friendly Islands; Tongatabu; Borabora).

Albula forsteri Valenciennes, op. cit., p. 256 (type locality, Tahiti

Albula conorhynchus Streets, Bull. U. S. Nat. Mus., no. 7, 1877, p. (Honolulu).—Günther, Rep. Voy. Challenger, vol. 1, pt. 6, 1880, p. 61 (Hilo)

Albula conorynchus Borodin, Bull. Vanderbilt Mar. Mus., vol. 1, art 3, 1932, p. 70 (Borabora).

Albula virgata Jordan and Jordan, Mem. Carnegie Mus., vol. 10, no. 1922, p. 6, pl. 1, fig. 1 (type locality, Honolulu; Hilo).

in length posteriorly; caudal in male elongate, 3/4 long as fish; paired fins extending beyond anal origin.

Body with dark spots or bars. Males with heart-shaped blackish blotch on throat and with stripes on gill membranes. First dorsal dark, with undulating oblique white lines and with 2 small black spots at upper margin behind second and third rays respectively. Second dorsal with 2-3 series of oblong spots. Outer half of anal blackish. Caudal crossed by dark bars or series of spots.

Length 85 mm. (Regan.)

Indian Ocean. Closely allied with Calliongmus persicus Regan, which has shorter head (1/4 in length of fish in specimens of this size), spinous dorsal rather

Albula vulpes (Linnaeus).

Esox vulpes Linnaeus, Syst. Nat., ed. 10, pt. 1, 1758, p. 313 (type locality, Bahama Islands) (on Bone fish Catesby, Nat. Hist. Carolinas, 1737, pl. 2, fig. 1).

Albula vulpes Seale, Occas. Pap. Bishop Mus., vol. 1, No. 2, 1902, p. 15 (Hilo), p. 18 (Honolulu).—Jenkins, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 432 (Honolulu).—Snyder, op. cit., vol. 22, 1902 (1904), p. 521 (Hanalei Bay, Kauai).—Jordan and Evermann, op. cit., vol. 23, pt. 1, 1903 (1905), p. 55 (Honolulu; Hilo).—Seale, Occas. Pap. Bishop Mus., vol. 4, no. 1, 1906, p. 5 (Tahiti).—Fowler, Bishop Mus. Bull., no. 22, 1925, p. 23 (Honolulu); no. 38, 1927, p.5 (Christmas Island); Mem. Bishop Mus., vol. 10, 1928, p. 27 (Tahiti; Honolulu; Society Is.); vol. 11, no. 5, 1931, p. 315 (Honolulu); vol. 11, no. 6, 1934, p. 386 (Hawaii).

more elevated - and with rays more produced - and caudal fin longer (at long at fish in specimens of 90 mm.). The two species very similar in coloration, but in C. persicus there is only one black spot at edge of anterior dorsal fin, behind the second ray.

Carcharodon carcharias (Linnaeus).

Squalus carcharias Linnaeus, Syst. Nat., ed. 10, pt. 1, 1758, p. 235 (type locality, Europe).

Carcharodon carcharias Jordan and Evermann, Bull. U.S.Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 44 (Puna, Hawaii).--Fowler, Mem. Bishop Mus. Honolulu, vol. 10, 1928, p. 18, fig. 5 (Hawaii); Proc. Fourth Pac. Sci. Congr Java, 1929, p. 488 (reference).

2418

Callionymus altivelis Schlegel

Callionymus altivelis Schlegel, Fauna Japonica, Pois., fts. 7-9, p. 155, pl. 79, fig. 1, 1845 (type locality, Nagasaki, Japan) — Günther, Cat. Fish. Brit. Mus., vol. 3, p. 147, 1861 (copied). — Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 25, p. 948, 1903 (copied). — Schmidt, Proc. Fourth Pac. Sci. Congress, p. 460, 1929. — Anonymous, Illustrat. Jap. Pl. Animals, vol. 1, pl. 48, fig. 5, 1931. — Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 31, art. 1, p. 374, 1913 (reference). Jordan and Snyder, Annot. Zool. Japon., vol. 3, p. 111, 1901 (Ohomura Bay). — Schmidt, Trans. Pac. Committee Acad. Sci. U.S.S.R., p. 141, Prog. 35, 1931 (Nagasaki).

Callionymus altovelex Bleeker, Verh. Kon. Akad. Wet. Amsterdam (Jap.), vol. 18, p. 18, 1879 (Ohomura, Kiusiu).

Callionichthys altivelis Franz, Abhandl. Kon. Akad. Bayer. Wiss., vol. 4, Suppl. Band 1, p. 83, 1910 (Yokohama).

Callyonymus altivelis Tanaka, Jap. Fish. Life Colours, no. 336, 1933.

Nyström, Bih. Svensk. Vet.-akad. Handl. Stockholm, bd. 13, afd. 4, no. 4, p. 36, 1887 (Nagasaki). —

depth 6 to 6 1/3; head 4 to 4 1/5 to gill opening 3 1/4 to 3 1/2.
Snout 2 1/5 to 2 1/4 in head; eye 4 to 4 1/4, 2 in snout; maxillary reaches 3/4 to 7/8 to eye, length 2 3/4 to 3 in head; interorbital very narrow, concave, eye entering upper profile of head; preopercle spine with single large hook or spine above. Gill opening round, lateral.

D. IV — I, 8, first dorsal origin over gill opening, first spine 2 1/6 to 2 1/3 in fish without caudal, fourth spine 1 1/5 to 1 2/3 in head, first branched ray 2 7/8 to 3 1/5 in fish without caudal; A. 8, first ray 2 1/2 to 3 in head, last ray 1 to 1 1/4, begin behind soft dorsal origin; caudal ldng, rounded, length 2 1/3 to 2 1/2 in rest of fish; pectoral 3 3/4 to 4 1/4, rays 23; ventral I, 5, length 1 to 1 2/5 in head.

Heterodontus quoyi (Fréminville).

Cestracion quoyi Fréminville, Rev, Mag. Zool., 1840, pl. 3 (type locality, Galapagos Islands).

Gyropleurodus quoyi Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 21 (compiled).

Heterodontus quoyi Fowler, Proc. Fourth Pac. Sci. Cong. Java, 1929, p. 484 (reference).

Readish, back with darker
or brown marbling. First more
or less pale gray. First dorsal
with large olive green blotch
mostly on outer portion of third
membrane. Second dorsal with
5 inclined reddish brown parallel
streaks. Caudal with lower
hind margin reddish, fin with
5 transverse yellowish bands.
Anal largely red marginally.
Paired fins grayish.

Japan.

Callionymus annulatus Weber

Callionymus annulatus Weber, Siboga Exped., vol. 57, Fische, p. 523, fig. 110, 1913 (type locality, Madura Straits; Kaimini Bay, south coast of Timor).

Head to gill opening 3 3/5 to caudal base, width 1 1/5 times length. Snout 3 in head; eye 3, orbit 2 4/5; greater than snout, orbits contiguous; preopercular spine 2, with antrorse short spine basally in front, and inner edge with 6 slightly antrorse recurved denticles.

Lateral line indistinct.

D. IV— 9, in male first & third spines elongate, also in female; A. 9; caudal 3 1/3 in rest of fish; pectoral rays 19, fin 1 2/5 in head;

Clupeoides lile (Valenciennes).

Meletta lile Valenciennes, Hist. Nat. Poiss., vol. 20, 1847, p. 278 (type locality, Malabar; Coromandel; Pondicherry).

Clupeoides lile Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 31 (compiled).

Rogenia argyrotaenia Kner, Reise Novara, Fische, vol. 1, pt. 5, 1865 p. 328 (Tahiti).

Harengula chrysotaenia Jordan and Seale, Bull. Bur. Fisher. U. S., vol. 25, 1905 (1906), p. 187 (type locality, Tahiti; East Indies).

ventral rays I, 5.

Sand color or grayish yellow on back, marked with darker, contrasted, distinct large rings, partly contiguous. First dorsal ash color. Second dorsal and paired fins with small dark dots on rays, and on caudal ~~dots~~ larger and ring like. Anal nearly colorless.

Length 41 to 76 mm. (Weber.

East Indies.

rclothone canina Gilbert.

Cyclothone canina Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2,
03 (1905), p. 604, pl. 71, fig. 2 (type locality, Off Kauai, in 480 to 577
thoms; Kauai, in 368 to 1021 fathoms; Kawi Channel, in 449 to 460 fathoms;
tween Oahu and Kauai, in 743 to 1218 fathoms; Bird Island, in 636 to 850
athoms; Niihau Island, in 417 to 426 fathoms).--Fowler, Mem. Bishop Mus.,
l. 10, 1928, p. 34 (Hawaiian Is.).

Callionymus apricus McCulloch

Callionymus apricus McCulloch, Biol. Res. Endeavour, vol. 5, pt. 4, p. 209, pl. 54, fig. 2, June 8, 1926 (type locality, Great Australian Bight, south from Eucla, 350–450 fathoms); Austral. Mus. Mem., no. 5, pt. 3, p. 339, Nov. 28, 1929 (reference).

Opisthonema libertatis (Günther).

Meletta libertatis Günther, Proc. Zool. Soc. London, 1866, p. 603 (type locality, Libertad, San Salvador, Central America).

Clupea libertatis Günther, Proc. Zool. Soc. London, 1877, p. 69 (Post Office Bay, Charles I., Galapagos).

Opisthonema libertate Jordan and Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 1, 1896, p. 433 (compiled).—Herre, Field Mus. Publ., no. 353, Zool. ser., vol. 21, April 15, 1936, p. 32 (Eden I., Galapagos).

Opisthonema libertatis Fowler, Proc. U. S. Nat. Mus., vol. 80, art. 6, 1932, p. 3 (Conway Bay, Indefatigable I., Galapagos).

Clupanodon libertatis Snodgrass and Heller, Proc. Wash. Acad. Sci., vol. 6, Jan. 31, 1905, p. 348 (Seymour I.; Wreck Bay, Chatham I., Galapagos).

2424

Callionymus benitegurii Jordan and Snyder

Callionymus benitegurii Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 23, p. ~~370~~ 956, fl. 17, 1900 (type locality, Tokyo Bay); — Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 25, p. 956, 1903 (Misaki, Otaru, Wakanoura, Kobe, Hakodate, Aomori, Hiroshima, Nagasaki, Matsushima Bay). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 375, 1913 (reference). — Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, no. 2, ~~Proc.~~ p. 317, June 27, 1925 (Toba; Kobe, Tatobu D.; Shibawa Bay). — Tanaka, Journ. Faculty Sci. Imp. Tokyo, Sect. 4 Zool., vol. 3, pt. 1, p. 40, Nov. 4, 1931 (reference); — Schmidt, Trans. Pac. Committee Acad. Sci. U.S.S.R., p. 143, 1931 (Nagasaki).

Annot. Zool. Japan., vol. 3, p. 111, 1901 (Yokohama).

2425

Callinichthys benitegurii Franz, Abhandl. Kon. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, p. 84, 1910 (Yokohama).

2426

U. S. N. M., no. 49402. Bay of Tokyo, Japan. K. Otabi. Length 185 mm.
Type.

losauropsis kauaiensis Gilbert.

Halosauropsis kauaiensis Gilbert, Bull. U. S. Fish Comm.,vol. 23,pt. 1903 (1905), p. 611 (type locality, Kauai, in 724 to 804 fathoms; off Molo-i; Bird Island; in 365 to 876 fathoms).—Fowler, Mem. Bishop Mus.,vol. 10, 28, p. 35 (Hawaii).

Aldrovandia kauaiensis Gilbert, op. cit. pl.74 (error).

Callionymus caeruleonotatus Gilbert

Callionymus caeruleonotatus Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, p. 648, pl. 89, 1903 (1905) (type locality; East of Maui, in 49 to 176 fathoms; Pailolo Channel; in 49 to 176 fathoms). — Fowler, Mem. Bishop Mus., vol. 10, p. 423, 1928 (Hawaiian Is.).

Depth 9 1/3; head to hind end of preopercular spine 3 7/8. Snout, 2 4/5 in head; eye 4, 1 2/3 in snout as measured to eye, greatly exceeds interorbital; orbit 3 in head; maxillary reaches opposite front eye edge, length 3 in head; preopercular spine half long as orbit, straight, slender, tip hooked up to form spine and upper edge with 4 or 5 retrorsely hooked evenly spaced spines;

lower edge with strong hooked spine at lower outer base and 2 or 3 irregular minute teeth; interorbital very narrow.

Lateral line single.

D. IV — 9, I, second spine 1 1/10 in head measured to hind end of preopercular spine, first ray 1 3/5, last ray 1 1/2; A. 8, I, first ray 3, last ray 1 1/5; least depth of caudal peduncle 5 4/5. pectoral 1 1/5, rays 17 or 18; ventral I, rays I, 5; caudal 1 2/5 — in rest of fish.

Dusky olive on head and upper half of body, finely vermiculated with narrow dusky lines enclosing very small spots of ground color. Lower half of sides of head and body, including branchiostegal membrane, upper surface of ventral with connecting membrane to pectoral, and lower half of caudal fin golden yellow,

marked with bright blue spots and lines and each blue mark with broad dusky edge; on lower side of head and trunk blue spots frequently coalesce to form longitudinal lines. Belly and lower parts generally plain dusky. Quadrate black blotch under ~~spinous~~ first dorsal. Narrow dark bar under last dorsal rays, sometimes one below first dorsal rays, and one on back of tail. Blackish streaks from eye around snout tip. Spinous dorsal dusky golden, crossed by zigzag blue lines and blotches, mostly arranged longitudinally. Anal like second dorsal, blue lines more oblique, marginal third of fin black. Darker markings on caudal as cross bars.

Hawaii. Females without elongated caudal rays - or blue and golden colors. Anal translucent, edge narrowly black, median

caudal rays faintly barred, and first dorsal black with narrow oblique lighter lines.

U. S. N. M., no. 51603. Off east coast of Maui. In 49 to 176 fathoms. U. S. Fish Comm. Length 86 mm. Type.

2431

Callionymus calliste Jordan and Fowler

Callionymus calliste Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 25, p. 954, fig. 8, 1903 (type locality, Misaki). — Schmidt, Trans. Pac. Committee Acad. Sci. U.S.S.R., p. 143, fig. 26, 1931 (Misaki).

2432

Callionymus calauropomus Richardson

Callionymus calauropomus Richardson, Ichth. Voy. Erebus and Terror, p. 10, pl. 7, figs. 4-5, 1844-48 (type locality, Australia). — Günther, Cat. Fish. Brit. Mus., vol. 3, p. 147, 1861 (types). — Schmeltz, Cat. Mus. Godeffroy, no. 4, p. 19, 1869 (Dvalau). — Klunzinger, Archiv Naturges., vol. 38, pt. 1, p. 31, 1872 (). — Castelnau, Proc. Zool. Acclimat. Soc. Victoria, vol. 2, p. 49, 1873 (Hobson's Bay). — Schmeltz, Cat. Mus. Godeffroy, no. 5, p. 29, 1874 (Dvalau; Tonga). — Castelnau, Victoria Offic. Rec. Philadelphia Exhib., p. 21, 1875 (). — ~~Klunzinger~~ Peters, Monatsb. Akad. Wiss. Berlin, p. 841, 1876 (1877) (New Ireland).

— Klunzinger, Sitzs. Ber. Akad. Wiss. Wien, math. & naturw. Classe, vol. 80, pt. 1, f. 386, 1879 (1880) (Port Philip; Hobson's Bay). — Günther, Rep. Voy. Challenger, vol. 1, pt. 6, f. 28, 1880 (Bass Strait, 38 fathoms), f. 53 (Philippines, 115 fathoms). — Macleay, Proc. Linn. Soc. New South Wales, vol. 5, f. 621, 1881 (compiled). — Ogilby, Cat. Fish. New South Wales, f. 37, 1886. — Günther, Rep. Voy. Challenger, vol. 22, pt. 57, f. 70, 1887 (Philippines). — McCoy, Prodr. Zool. Victoria, vol. 2, dec. 20, pl. 192, 1890 (Hobson's Bay). — Lucas, Proc. Roy. Soc. Victoria, ser. 2, vol. 2, f. 29, 1890 (reference). — Woodward, Western Australian Year Books, 1900-1, f. 271 (1902). — Waite, Mem. New South Wales Nat. Club, vol. 2, f. 51, 1904. — Jordan and Richardson, Philippine Journ. Sci., f. 55, 1910 (reference).

— Ogilby, Proc. Roy. Soc. Queensland, vol. 23, p. 48, 1910 (Callionymus achates de Vis founded on female). — Mc Culloch and Waite, Records South Australian Mus., vol. 1, p. 48, 1918. — Mc Culloch, Records Austral. Mus., vol. 14, pt. 1, p. 12, 1923 (Port Jackson). — Mc Culloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 173, July 7, 1925 (reference). — Fowler, Mem. Bishop Mus., vol. 8, p. 422, 1928 (compiled). — Mc Culloch, Austral. Mus. Mem., no. 5, pt. 3, p. 338, Nov. 28, 1929 (reference). — Herre, Journ. Pan-Pac. Res. Inst., vol. 8, fol. 32, fig. 285 b, no. 4, p. 11, 1933 (Dumaguete). — Mc Culloch, Fish. New South Wales, ed. 3, p. 77, 1934 (Port Jackson). — Herre, Fish. Herre Philippine Exped. 1931, p. 93, 1934 (Dumaguete).

— Roxas and Marton, Departm. Agric. Comm. Manila, Tech. Bull. 6, p. 240, 1937 (reference).

Callionymus achates de Vis, Proc. Linn. Soc. New South Wales, vol. 7, p. 620, 1883 (type locality, Queensland).

Depth 5 1/2 to 6; head to gill opening 3 2/3 to 4, width 1 to 1 2/5. Snout 2 1/2 to 3 in head; eye 4 to 4 1/2, 1 1/5 to 1 4/5 in snout, greatly exceed interorbital; maxillary reaches 2/3 to 9/10 to orbit, length 3 1/2 to 3 2/3 in head; teeth small, pointed, in 3 to 5 irregular rows; interorbital 1/2 of eye; preopercular spine long, ends in 2 upward directed points.

Lateral line single.

D. $\frac{IV}{=}$ 8, $\frac{I}{=}$, first spine 1 7/8 to 2 3/4 in head, last spine 3 2/5 to 4, first ray 1 1/2 to 1 3/5, last ray 1 1/3 to 1 1/2; A. $\frac{I}{=}$, 6 or $\frac{I}{=}$, 7, first ray 2 to 2 1/4, last ray 1 3/4 to 2; least depth of caudal peduncle 3 2/3 to 4; ~~for~~ caudal 1 2/3 to 2 1/2 in rest of fish;

nobatos planiceps Garman.

Rhinobatus planiceps Garman, Bull. Mus. Comp. Zool., vol. 6, 1880,
168 (type locality, Peru; Galapagos); Proc. U. S. Nat. Mus., vol. 3, 1880,
520 (Galapagos). —Snodgrass and Heller, Proc. Wash. Acad. Sci., vol. 6,
n. 31, 1905, p. 345 (Galapagos Is.).

Rhinobatos planiceps Fowler, Proc. Fourth. Pac. Sci. Congr. Java,
29, p. 499 (reference).

pectoral 1 1/4 to 1 1/3 in head, rays 19 or 20; ventral rays I, 5, fin subequal with head.

Pale olive or brownish above, obscurely mottled with gray or paler. Sides of head and prepectoral region with grayish variable streaks, sometimes reticulated more or less. Dark-gray blotch at base of upper pectoral rays. Iris with yellow ring around pupil. First dorsal pale red, with gray black blotch on last 2 or 3 membranes, usually posterior more extensive. Second dorsal with irregular grayish longitudinal streaks, fin also more or less clouded darker. Caudal with gray spots on membranes, lower margin dark gray. Other fins pale.

Philippines, Melanesia, Queensland, New South Wales, Victoria, South Australia.

protomicrus bispinatus (Quoy and Gaimard).

Scymnus bispinatus Quoy and Gaimard, Voy. Uranie, Zool., 1824, p. 7, pl. 44, figs. 1 and 2 (type locality, Mauritius).

Euprotomicrus bispinatus Fowler, Mem. Bishop Mus., vol. 10, 1928, p. (copied); Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 497 (reference).

Euprotomicrus hyalinus R. S. Eigenmann, Proc. Cal. Acad. Sci., ser. , vol. 3, 1890, p. 35 (type locality, Pacific Ocean between San Francisco nd Honolulu, but nearer the latter).

Callionymus calcaratus Macleay

Callionymus calcaratus Macleay, Proc. Linn. Soc. New South Wales, vol. 5, p. 628, 1881 (type locality, Port Jackson). — Ogilby, Proc. Linn. Soc. New South Wales, vol. 10, p. 121, 1885 (Port Jackson). — Mc Culloch, Rec. Austral. Mus., vol. 14, pt. 1, p. 10, pl. 3, fig. 2, 1923 (Port Jackson; Houtmans Abrolhos, W. Australia); Biol. Res. Endeavour, vol. 5, pt. 4, p. 204, June 8, 1926 (mouth of Wide Bay, Queensland); Mc Culloch, Fish. New South Wales, ed. 3, p. 77, 1934 (Port Jackson); Austral. Mus. Mem., no. 5, pt. 3, p. 338, Nov. 28, 1929 (reference);

Callionymus curvicornis (not Valenciennes) Cat. Fish. New South Wales, p. 37, 1886. — Stead, Proc. Linn. Soc. New South Wales, vol. 25, p. 476, 1900 ( ). — Waite, Mem. New South Wales Nat. Club, vol. 2, p. 51, 1904.

2439

Callionymus reevesii (not Richardson) Ramsay and Ogilby, Proc. Linn. Soc. New South Wales, ser. 2, vol. 1, p. 942, 1886 (Port Jackson). — Waite, Mem. New South Wales Nat. Club, vol. 2, p. 51, 1904.

yatis brevis (Garman).

Trygon brevis Garman, Bull. Mus. Comp. Zool., vol. 6, 1880, p. 171 (type locality, Payta, South America).

Dasyatis brevis Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 25 (Honolulu; type of D. hawaiiensis); Proc. Fourth Pac. Sci. Congr. Java, 1929, p. (reference); Mem. Bishop Mus., vol. 11, no. 5, 1931, p. 314 (Honolulu).

Dasyatis hawaiiensis Jenkins, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 420, pl. 1, fig. 1 (type locality, Honolulu).—Jordan and Evermann, op. cit., vol. 23, pt. 1, 1910, p. 48, pl. 4, fig. 1 (type).

Trygon hawaiensis Günther, Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 494 (copied).

2440

Callionymus cookii Günther

Callionymus cookii Günther, Proc. Zool. Soc. London, p. 665, 1871 (type locality, Rarotonga, Cook Islands); Journ. Mus. Godeffroy, vol. 6, pt. 11, p. 192, pl. 113, fig. 13, 1877 (type). — Kendall and Goldsborough, Mem. Mus. Comp. Zool., vol. 26, p. 324, 1911 (Fakarava). — Fowler, Mem. Bishop Mus., vol. 8, p. 423, 1928 (Fakarava).

— Weber, Siboga Exped., vol. 57, Fische, p. 524, 1913 (Aeo; Kabaëna; Amboina; Banda Island; Timor). — Tual, Kei Islands).

depth 6 3/4; head 3 1/6 (snout distended), width 1 1/2. Snout 2 in head, width at front of eye equals its length; eye 4, less than 2 in snout; maxillary reaches eye, length 2 3/4 in head; narrow band of fine feeble teeth in each jaw; interorbital very narrow bony keel, grooved above; preopercle spine long as eye, its inner edge finely serrate. Gill opening much less than eye.

Skin smooth. Lateral line superior along back.

D. IV– 8, first spine 1 3/5 in head, last ray long as head measured to end of preopercle spine; A. 7, last ray long as head measured to gill opening; caudal 1 4/5 in combined head and trunk; least depth of

caudal peduncle 4 in head; pectoral equals head to gill opening; ventral equals head to tip of preopercle spine.

Pale isabella color, becoming whitish on under surface. Back with 5 obscure isabella color saddles, with smaller alternate spots along middle of side. Also back with obsolete mottlings of dark isabella color in pale areas. Cheek with 5 oblique whitish streaks or lines sloping downward and forward. Iris pale flesh pink, with some neutral gray shadings. Spinous dorsal whitish, first membrane with few obsolete pale brown spots, second and third membranes with 2 dull lines transversely

or obliquely downward posteriorly. Soft dorsal and anal whitish. Caudal whitish, with 6 brownish transverse bands. Pectoral and ventral very pale brownish.

Polynesia.

2444

Callionymus cooperi Regan

Callionymus cooperi Regan, Trans. Linn. Soc. London, ser. 2, vol. 12, Zool., p. 247, May 1908 (type locality, Maldives, Huvadiva and Haddumati, in 40 to 44 fathoms).

Head to gill opening 3 1/2 in fish. Eye 3 in head, subcontiguous; maxillary not reaching vertical from anterior edge of eye; preopercular spine with curved tip, with 3 to 5 tooth-like projections on upper edge and with an outer antrorse extension at base; occipital region rugose. Gill openings small, superior. D. IV, 9, first 3 rays of first dorsal in male extended into long filaments, of which first when laid back, reaches caudal; second dorsal highest

Chimaera gilberti Garman.

Chimaera gilberti Garman, Mem. Mus. Comp. Zool., vol. 40, no. 3, 1911 p. 90 (type locality, Kauai; Hawaii; in 957 to 1067 fathoms).--Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 26 (compiled).

Chimaera purpurascens (not Gilbert in Jordan and Snyder) Gilbert, Bul U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 582, fig. 231 (Kauai).

anteriorly, last ray longer than 3 preceding, not reaching caudal when laid back; D. 8 or 9, rays increasing in length posteriorly; caudal in male of moderate length, less than 1/5 long as fish; pectoral reaches fourth anal ray, ventral to second anal ray.

Series of dark spots along middle of side. Membrane of first dorsal dusky.

Length 56 mm., male. (Regan).

Indian Ocean. Said to be allied to Callionymus sagitta Pallas.

Mobula japanica (Müller and Henle).

Cephaloptera japanica Müller and Henle, Syst. Beschr. Plagiost., 1841, p. 185 (type locality, Japan).

Mobula japonica Fowler, Bishop Mus. Bull., no. 38, 1927, p. 3, pl. 1 figs. a to c (Honolulu); Mem. Bishop Mus., vol. 10, 1928, p. 26 (compiled).

Mobula japanica Fowler, Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 507 (reference).

2446

Callionymus corallinus Gilbert

Callionymus corallinus Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, p. 649, fig. 251, 1903 (1905) (type locality, Kauai Channel between Maui and Lanai, in 32 to 37 fathoms). — Fowler, Mem. Bishop Mus., vol. 10, p. 423, 1928 (copied).

Depth 5 4/5; head to end of preopercular spine 2 3/5. Snout 3 in head; eye 6 2/5, 2 1/4 in snout, greatly exceeds interorbital; maxillary reaches 2/3 to eye, length 4 in head; interorbital narrow, less than half of eye; preopercular spine robust, straight, tip nearly reaches opposite pectoral origin, outer edge smooth with short antrorse spine near base, inner edge with 6 or 7 strong slender curved spinelets evenly spaced. Gill

opening minute superior pore.

Lateral line distinct, arched toward front of second dorsal and slopes back until little superior along side of caudal peduncle.

D. VII I 9, I, spines not extended filaments, second 1 4/5 in head, first ray 2 1/8, last ray 2 1/5; A. 8, I, first ray 4, last ray 2 2/5; caudal 1 1/3, little convex behind; least depth of caudal peduncle 4 7/8; pectoral 1 1/2, rays 18; ventral I, 5, fin 1 1/4 in head.

Greenish olive above, on throat and abdomen silvery white. Upper surfaces with reddish gilt formed as stripes and patches nearly concealing ground color. Many minute coral red spots on snout above and interorbital with upper part of eyeballs, upper half of opercle and preopercular spine; line bounds occiput and few on upper part of

cheek; form inconspicuous cross bar below first dorsal and 2 below second dorsal; also on membrane between first and second dorsal spines, and few on terminal half of ventral and median caudal rays. ~~Spinous~~ First dorsal largely dusky. Second dorsal translucent, with 6 oblique olive brown bars on tips of last rays, last one blackish. Anal translucent, last rays tipped black. Caudal with 3 broad olive brown bars, wide as translucent interspaces. Pectoral largely translucent. Ventral with 1 broad black basal bar and one at tip. Iris silvery, tinged with red.

Hawaiian Islands.

U. S. N. M., No. 51581. Auau Channel between Maui and Lanai islands. In 32 to 37 fathoms. U. S. Fish Comm. Length 40 mm. Type.

2449

Callionymus curvicornis Valenciennes

Callionymus curvicornis Valenciennes, Hist. Nat. Poiss., vol. 12, p. (223) 298, 1837 (type locality, Bourbon).

— Günther, Cat. Fish. Brit. Mus., vol. 3, p. 145, 1861 (China). — Kner, Reise Novara), Fische, p. 188, 1865 (Hong Kong) — Bleeker, Ned. Vijds. Dierk., vol. 4, Poiss., p. 76, 1874 (Faune Madagascar, Pollen et Van Dam, Pt. 4, reference); — Günther, 127, 1873 (1874 reference); — Günther, Rep. Voy. Challenger, vol. 1, pt. 6, p. 53, 1880 (Philippines, in 82 fathoms), p. 55 (Hong Kong). — Jordan and Richardson, Philippine Journ. Sci., p. 55, 1910 (reference). — Seale, Philippine Journ. Sci., vol. 9, pt. 1, p. 79, 1914 (Hong Kong).

— Martens, Preuss. Exped. d. Ost Asien, vol. 1, p. 393, 1876 (Yokohama and Yeddo). — Jordan and Snyder, Annot. Zool. Japan., vol. 3, p. 111, 1901 (Yokohama; Yezo; Nagasaki). — Károli, Termesz. Füzetek, Budapest, vol. 5, p. 168, 1881 (1882) (Yokohama; Nagasaki; Kobe; Hirado). — Sauvage, Hist. Madagascar, Poiss., p. 521, 1891 (name only).

— Fowler, Proc. Acad. Nat. Sci. Philadelphia, vol. 81, p. 615, 1929 (Hong Kong). — Chu, Biol. Bull. St. John's Univ., no. 1, p. 169, Jan. 1931 (reference). — Herre, Hong Kong Nat. Suppl., no. 3, p. 35, Feb. 1934 (Hong Kong). — Royas and Marten, Depart. Agric. Comm. Manila, Tech. Bull. 6, p. 240, 1937 (reference).

depth 6 2/3; head to gill opening 3 3/4, width 1 1/3. Snout 3 3/4 in head; eye 4 1/4, 1 1/5 in snout, greatly exceeds interorbital. maxillary reaches opposite front eye edge, length 3 1/2 in head; band of villiform teeth in each jaw, lower little broader; interorbital width 2 1/2 in eye; preopercular spine 1 1/3 in eye, with 2 denticles pointing slightly forward on upper edge, ends in backward directed spine behind (left one bifid), and very slight outer basal rudimentary denticle forward.

Lateral line single, curves upward over end of depressed pectoral to extend high along upper side of back, not distinct behind second dorsal base.

D. $\underline{\underline{IV}}$ — 9, $\underline{\underline{I}}$, third spine 1 in head,

first ray 1 1/4, last ray 1; A. 7, I, 1 1/10; first ray 2 3/5, last ray 1 1/10; least depth of caudal peduncle 4 1/2; caudal 2 4/7 in rest of fish; pectoral 3 3/7; ventral 2 4/5.

Brown above, whitish below, or on under surface of head and abdomen. Scattered lavender gray spots on sides of head, especially cheeks, and lower sides of body. First dorsal brownish, with slate black blotches, and black blotch on last membrane behind fourth spine. Soft dorsal pale brown with obscure darker or blackish brown spots. Caudal dull brown with 4 diffuse blackish brown cross bars and lower margin blackish. Pectoral brown. Ventral gray black, with margins whitish.

7453

Bourbon, Philippines, China, Japan.

A. N. S. P., one example. Hong Kong, China. - April 29, 1929. Henry W. Fowler. Length 130 mm.

norhynchus gonorynchus (Linnaeus).

Cyprinus gonorynchus Linnaeus, Syst. Nat., ed. 12, 1766, p. 528 (type cality, Cape of Good Hope).

Gonorhynchus gonorynchus Fowler, Occas. Pap. Bishop Mus., vol. 8, no. 1923, p. 375 (Honolulu); Mem. Bishop Mus., vol. 10, 1928, p. 28 (Honolulu).

Gonorhynchus moseleyi Jordan and Snyder, Journ. Wash. Acad. Sci., vol. , Sep. 1923, p. 347 (type locality, Honolulu).

Callionymus decoratus (Gilbert)

Callionichthys decoratus Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, p. 651, pl. 90, 1903 (1905) (type locality, Penguin Bank, off southern Oahu, in 27 fathoms; Molokai; Pailolo Channel in 23 to 52 fathoms). — Fowler, Occas. Pap. Bishop Mus., vol. 10, no. 7, p. 389, 1923 (Honolulu); Bull. Bishop Mus., no. 38, p. 29, 1927 (Honolulu); Mem. Bishop Mus., vol. 10, p. 422, 1928 (Honolulu; types).

Callionichthys astrinus Jordan and Jordan, Mem. Carnegie Mus., vol. 10, no. 1, p. 80, pl. 4, fig. 1, Dec. 1922 (type locality, Honolulu).

Callionichthys zanectes Jordan and Jordan, op. cit., p. 81, pl. 4, fig. 2, Dec. 1922 (type locality, Honolulu).

depth 7 3/4 to 8; head to gill opening 3 3/5 to 3 5/6. Snout 2 1/3 to 2 3/5 in head; eye 2 1/4 to 3 3/5, 1 to 1 2/3 in snout, eyes contiguous; maxillary reaches 3/4 to 7/8 to eye, length 3 to 4 in head; preopercular spine 1 to 1 1/2 times eye, slender, straight, ends behind in long tapering point directed backward, upper edge with 7 or 8 antrorse serrae, outer edge with small strong hooks like spine basally; interorbital space entire bony keel.

Lateral line single.

D. IV (description gives VI but figure shows IV) I 9, I; first spine 2 1/4 to 2 3/5 in fish to caudal base; caudal exceeds rest of fish by nearly length of head to gill opening; ventral 3 1/3 to 3 3/5; A. 8, I; first ray 2 to 2 1/2 in head, last ray 1 1/5 to 1 1/4; least

Gilbert 2

depth of caudal peduncle 3 3/4 to 4;
pectoral 1, rays 20.

Above brown, gray brown or gray pink, white below. Four or 5 somewhat darker cross bars on back and row of 5 median lateral spots on body. Obsolete dark area below eye and another below base of predopercular spine. Many rounded variable gray spots on backs, each bordered by dark line. First dorsal black basally and marginally, long first ray whitish. Second dorsal and caudal with blackish brown small spots, usually as 7 or 8 distinct transverse series like cross bars in caudal. Anal blackish, margin below white in adult males. Paired fins finely spotted on upper part of pectoral, larger bars or spots on ventral. Adult male with broad jet black band down median line of throat, expanded

little at its end on breast; diverging each side & narrow jet-black streaks more or less arched over gill membranes and over connecting membrane from inner ventral ray to pectoral base, each black streak divided longitudinally by narrow pearly line edged above and below by wider pearly lines, interspaces pearl gray. Females and young males with throat uniformly whitish, first dorsal spine not extended and caudal less elongate.

Hawaii.

U. S. F. M., no. 51609. Penguin Banks, off southern coast of Oahu. In 27 fathoms. U. S. Fish Comm. Length 183 mm. Male. Type.

2458

Callionymus doryssus Jordan and Fowler

Callurichthys doryssus Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 25, p. 945, fig. 4, 1903 (type locality, Nagasaki; Wakamoura; Aomori). — Jordan and Thompson, Mem. Carnegie Inst., vol. 6, no. 4, p. 294, fig. 72, Sept. 1914 (Misaki). — Jordan and Hubbs, Mem. Carnegie Inst., vol. 10, no. 2, p. 316, June 27, 1925 (Toba). — Tanaka, Journ. Faculty Sci. Imp. Tokyo, Sect. 4 Zool., vol. 3, pt. 1, p. 52, Nov. 4, 1931 (reference).

— Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 372, fig. 329, 1913 (reference).

Callurichthys dorissus Schmidt, Trans. Pac. Committee Acad. Sci. U. S. S. R., p. 141, 1931 (Misaki; Nagasaki; Tsuruga).

2459

Callionymus enneactis Bleeker

Callionymus enneactis Bleeker, Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 14, p. 95, 1879 (type locality, Singapore).

— Herre, Fishes Herre 1931 Philippine Exped., p. 93, 1934 (Culion). — Roxas and Martin, Departm. Agric. Comm. Manila, Techn. Bull. 6, p. 240, 1937 (reference).

depth 7; head to end of pre-
opercular spine 4, ~~width~~ snout
convex; eye 3, greatly exceeds interorbital ~~eye~~;
upper jaw strongly protractile;
preopercular spine little shorter
than eye, well curved, with
small basal antrorse spine in
front and 3 strong divergent
denticles, and posterior spine
shorter than others; interorbital region convex.
high, well before first dorsal.
Gill opening
Lateral line distinct, with
transverse intersection at nape.
D. IV – 9, first dorsal little
more than ~~double~~ twice shorter than second
dorsal, second dorsal not higher
than body, anteriorly twice higher
than spines, ~~fourth~~ third longest
and fourth less than twice ~~double~~ shorter;
A. 8, like second dorsal; caudal
not much longer than head, obtuse,
lanceolate, subrhomboid; pectoral
rays I, 16 or I, 17; ventral rays I, 5,
= shorter than head

Ophichthys polyophthalmus Bleeker, Ned. Tyds. Dierk., vol. 2, 1865, p. (type locality, Amboina).

Ophichthus polyophthalmus Fowler, Bishop Mus. Bull., no. 38, 1927, p. Kunhei, Kahoolawe I.); Mem. Bishop Mus., vol. 10, 1928, p. 45 (type of Micr-nophis fowleri; Honolulu); vol. 11, no. 6, 1934, p. 389 (reference).

Microdonophis fowleri Jordan and Evermann, Bull. U. S. Fish Comm., . 22, 1902 (1903), p. 164 (type locality, Honolulu).—Jordan and Snyder, oc. U. S. Nat. Mus., vol. 27, 1904, p. 940 (Hawaiian Is.).—Jordan and Ever-n, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 82, pl. 6 (type; nolulu).—Jordan and Snyder, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 3 (Honolulu).

Ophichthys garretti Günther, Journ. Mus. Godeffroy, vol. 9, pt. 17, 10, p. 397, pl. 163, fig. A (type locality, Society Islands).

Ophichthys (Callechelys) punctulatus Pietschmann, Bishop Mus. Bull., . 73, 1930, p. 5, fig. 2 (front part of body) (Hitiaa District, Tahiti).

fin not shorter than head. Anal papilla slender, conic.

Color of body above and on sides olivaceous variegated with brown, below pearly. Iris purplish golden. Sides of head spotted with brown, below 4 brown equidistant spots occupying 4 equidistant quadrilateral areas. Fins yellowish or hyaline rose. First dorsal between third and fourth spines with black oblong ocellus ringed pearly, and anteriorly 3 or 4 well inclined undulated, brownish violet bands. Second dorsal, ventral and caudal membranes with small brown spots. Upper and median pectoral rays variegated with brown spots. Ventrals with brown margins.

Length 55 mm. (Bleeker.)

Malaya.

richthus triserialis (Kaup).

Muraenophis triserialis Kaup, Cat. Apod. Fish, 1856, p. 12 (type cality, Pacific Ocean; voyage of the Herald).

Ophichthys triserialis Gilbert, Proc. U. S. Nat. Mus., vol. 12, 89, pp. 155, 180 (Chatham I., Galapagos).--Jordan and Evermann, Bull. U. Nat. Mus., no. 47, pt. 1, 1896, p. 384 (compiled).

Ophichthus triserialis Jordan and Davis, Rep. U. S. Fish Comm., 16, 1888 (1892), p. 631 (compiled).--Snodgrass and Heller, Proc. Wash. ad. Sci., vol. 6, Jan. 31, 1905, p. 347 (compiled).--Fowler, Proc. Acad. t. Sci. Phila., 1912, p. 17 (type of Herpetoichthys callisoma); Copeia, 112, Nov. 20, 1922, p. 82 (same type); Mem. Bishop Mus., vol. 10, 1928, 45 (same type).

Herpetoichthys callisoma Abbott, Proc. Acad. Nat. Sci. Phila., 80, p. 475 (type locality, Pacific Ocean).

Ophichthus rugifer Jordan and Bollman, Proc. U. S. Nat. Mus., vol. 12, 1889, p. 155 (type locality, Charles Island, Galapagos).

Callionymus filamentosus Valenciennes

Callionymus filamentosus Valenciennes, Hist. Nat. Poiss., vol. 12, p. 303, pl. 359, 1837 (type locality, Manado, Celebes). — Bleeker, Verh. Batavia. Genoot. (Kluns. Gob.), vol. 22, p. 3., 1849 (name); Journ. Indian Archip.; vol. 3, p. 67, 849 (Celebes); Nat. Tijds. Ned. Indie, vol. 2, p. 213, 1851 (Celebes); vol. 3, p. 278, 1852 (Moluccas); p. 455 (Banka); Ind. Neerl., vol. 1, no. 5, p. 48, 1856 (Amboina); vol. 1, no. 3, p. 5, 1856 (Manado); vol. 2, no. 7, p. 65, 1857 (Amboina).

— Günther, Cat. Fish. Brit. Mus., vol. 3, p. 147, 1861 (copied). — Károli, Termesz. Füzetek, Budapest, vol. 5, p. 168, 1881 1867 (Ceylon; Singapore). — Fowler, ~~Cat.~~ List Fish. Malaya, p. 222, 1937 (reference).

— Regan, Journ. Bombay Nat. Hist. Soc., vol. 16, no. 2, p. 332, 1905 (Muscat, Arabia).

— Bleeker, Verslag. Kon. Akad. Wet. Amsterdam, vol. 14, p. 110, 1862 (Batjan); Ned. Tijds. Dierk., vol. 2, p. 292, 1865 (Amboina); Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 14, p. 88, 1879 (Sumatra; Singapore; Celebes; Batjan; Amboina).

2463

Callionichthys filamentosus Herre, Philippine Journ. Sci., vol. 59, No. 3, p. 369, 1936 (Manila Bay). — Roxas and Martin, Depart. Agric. Comm. Manila, Techn. Bull. 6, p. 241, 1937 (reference).

~~Head 3 4/5 in length to gill opening. Snout 2 4/5 in head; eye 3 1/3. Preopercular spine straight~~

Depth 7 3/4 to 10; head 3 1/4 to 4. Snout longer than eye; eye 3 1/2 to 4 in head to gill opening, greater than interorbital; maxillary strongly protractile; interorbital 1/4 of eye; preopercular spine little or not longer than eye, with small basal outer spine directed forwards, and 5 to 8 unequal serrae antrorsely on inner edge. Gill opening superior, well before first dorsal origin.

Lateral line distinct, with contiguous transverse nuchal intersection, and 2 branches on head, one below eye and and other on preopercle.

D. IV-10, in male first spine elongated, short in female, second dorsal little or not higher than body, last 2 rays bifurcate and elongated; A. 10, rays all simple or last 2 branched, fin subequal with second dorsal; caudal obliquely rhomboid or rounded, not distinctly longer than head, male with 2 median rays branched and greatly extended, not extended in female; pectoral rays I, 18 to I, 20, ventral I, 5.

Body and sides olivaceous or brownish olivaceous, ornamented with irregular to crowded pale blue to pearly ocelli, below pale rose or

silvery. Iris green, edge of pupil golden. Sides of malle frequently dotted with brown. First dorsal rose or yellow, clouded with brownish and small brown or black spots, posteriorly black with 2 or 3 oblique undulated yellow streaks. Second dorsal pearly rose with numerous brownish dots and spots or streaks of pearly; frequently forming reticulations. Caudal membrane hyaline rose, rays golden, above black ocelli fringed with bluish and transverse waved bluish lines frequently form reticulations, male greener than female. Paired fins with hyaline membrane, rays yellow or golden, dotted with brown. Anal base hyaline white, below violaceous, edge white.

Length 85 to 164 mm. (Bleeker.

Arabia, India, (Malaya, Ceylon, East Indies, Philippines!

2466

Callionymus fimbriatus Herre

Callionymus fimbriatus Herre, Fishes Herre 1931 Philippine Exped., p. 94, 1934 (type locality, Sitankai). — Rojas and Martin, Departm. Agric. Comm. Manila, Techn. Bull. 6, p. 240, 1937 (reference).

2467

Callionymus fluviatilis Day

Callionymus fluviatilis Day, Fishes of India, p. v. 2, p. 322, 1876 (type locality, Hooghly at Calcutta); Fauna of British India, Fishes, vol. 2, p. 304, 1889. — Fowler, Proc. Acad. Nat. Sci. Philadelphia, vol. 89, p. 258, figs. 285 (preopercular spine) and 286, May 19, 1937 (Bangkok, Siam).

Depth 8 2/3 to 9 1/2; head 3 1/2 to 3 2/3, width 1 to 1 1/8. Snout 3 to 3 1/5 in head from snout tip; eye 2 7/8 to 3 1/2, greater than snout in small specimens to 1 1/5 in snout with age, greatly exceeds narrow interorbital; maxillary extends 1/3 in eye, length 2 1/4 to 2 1/3 in head from snout tip; lips narrow forward, lower laterally broad and fleshy; interorbital 1/3 of eye, little concave; preopercular spine nearly long as eye, with outer basal, short, antero-basal retrose spine, and besides strong terminal denticle 2 or 3 strong curved spines on inner edge.

Skin smooth. Lateral cutaneous ridge distinct, high along back, finally

Gobioides ruber Buchanan-Hamilton, Fishes of Ganges, p. 38, 1822 (type locality, estuary below Calcutta). — Hora, Mem. Indian Mus., vol. 9, ~~1934~~ p. 185, pl. 18, fig. 2, 1934 (Buchanan-Hamilton's figure).

reaches caudal base medially. -469

D. IV — 10, I, second spine 2 1/3 to 2 3/4 in head from mandible tip, soft fin height 2 to 2 1/2; A. 9, I, fin height 2 1/3 to 3 1/4; caudal 1 1/8 to 1 1/5, little convex behind; least depth of caudal peduncle 4 1/3 to 6; pectoral 1 1/8, rays 16; ventral rays I, 5, fin 1 1/5 to 1 1/4 in total head length. Vent close before anal, with small, conic papilla.

Pale brown above, mottled with darker brown, numerous variable small spots, specks and dots. Row of dark spots along upper edge of cutaneous lateral keel, variable, best seen as viewed above. Iris gray. Under surfaces of head and body uniform whitish. Fins largely pale to translucent, rays and spines of dorsals with dark spots, blackish on spines of first dorsal. Four dull transverse bars on caudal, fading out below. Pectoral specked with brown. Several rows of rather large brown spots on ventral.

A. M. A. P.; one example. Bangkok, Siam.

R. M. de Schauensee.

Callionymus calauropomus Richardson

Callionymus calauropomus Richardson, ~~Zool.~~ Dichth. Voy. Erebus and Terror, p. 10, pl. 7, figs. 4 – 5, 1844-48 (type locality, Australia). — Günther, Cat. Fish. Brit. Mus., vol. 3, p. 147 (Schmeltz, Cat. Mus. Godeffroy, hg. 4, p. 19, 1869 (Ovalau); no. 5, p. 29, 1874 (Ovalau; Tonga). 1861 (types). — Günther, Rep. Voy. Challenger, vol. 1, pt. 6, p. 28, 1880 (Bass Strait, in 38 fathoms), p. 53 (Philippines, in 115 fathoms; vol. 22, pt. 57, p. 70 (McCoy, Prodr. Zool. Victoria, vol. dec. 20, pl. 192, 1890 (Holotype)). 1887 (Philippines). — Jordan and Richardson, Philippine Journ. Sci., vol. 14, pt. 1, p. 12, 1923 (Port Jackson) p. 55, 1910 (reference). — Herre, Journ. Pan-Pac. Res. Inst., vol. 8, no. 4, p. 11, 1933 (Dumaguete). — Herre, Fishes Herre (fig. 32, fig. 285 a) 193, Philippine Exped., p. 93, 1934 (Dumaguete). — Roxas and Manten, Dep. Agric. Comm. Manila, Tech. Bull. 6, p. 2040, 1937 (reference).

(Fowler, Mem. Bishop Mus., vol. 8, p. 422, 1928 (compiled). — McCulloch, Austral. Mus. Mem., no. 5, pt. 3, p. 338, Nov. 28, 1929 (reference). — Peters, Monatsb. Akad. Wiss. Berlin, p. 841, 1876 (1877) (New Ireland).

McCulloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 173, July 7, 1925 (reference).

McCulloch, Fishes New South Wales, ed. 3, p. 74, 1934 (Port Jackson).

2471

Callionymus gardineri Regan

Callionymus gardineri Regan, Trans. Linn. Soc. London, ser. 2, Zool., vol. 12, pt. 3, p. 248, pl. 30, fig. 8, 5 May 1908 (type locality, Caragador Carajor, in 20 to 30 fathoms).

Callionichthys gardineri Barnard, Ann. South African Mus., vol. 21, pt. 2, p. 447, Oct. 1927 (Natal, in 20 fathoms).

2472

Callionymus gardineri Regan

Callionymus gardineri Regan, Trans. Linn. Soc. London, ser. 2, vol. 12, Zool., p. 248, pl. 30, fig. 5, May 1908 (type locality, Cargados Carajos, in 20 to 30 fathoms).

Depth 9; head to gill opening 4 1/5. Snout 2 2/5 in head; eye 3 ~~in head~~, 1 1/6 in snout; maxillary reaches 3/5 to eye, length 3 1/4 in head; eye entering upper profile of head; preopercular spine 9/10 of eye, with outer antrorse extension at base. Gill opening small, about 1/2 pupil.

Lateral line single.

D. IV — 9, I, first spine in male extended in filament or 2 2/3 in fish without caudal, fourth spine 2 in head, first

Rhineodon typus Andrew Smith.

Rhincodon typus Andrew Smith, Zool. Journ., vol. 4, 1829, p. 443 (type locality, Table Bay, South Africa).

Rhineodon typus Fowler, Mem. Bishop Mus. ~~Honolulu~~, vol. 10, 1928, p. 18 (compiled); Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 488 (reference

ray 2 1/8, last ray 1 1/4; A. 8, I, first ray 2 7/8, last ray 1 2/7; least depth of caudal peduncle 4 4/5; caudal in male elongate, 1 3/7 in rest of fish; pectoral 1 1/10 in head, rays about 18; ventral rays I, 5, fin 3 1/3 in fish without caudal.

Head and body marbled or variegated. Shall dusky area on throat. Spinous dorsal with undulating oblique stripes with dark edges, which break up posteriorly into series of spots enclosed in dark rings. Blackish spot just behind tip of third dorsal spine. Second dorsal and caudal with white (in spirit) spots and vermiculations; caudal also with some dark spots. Anal with dark edge.

Length 220 mm. (Regan).

Glyphis glaucus (Linnaeus).

Squalus glaucus Linnaeus, Syst. Nat., ed. 10, pt. 1, 1758, p. 235 type locality, European Ocean).

Prionace glauca Snyder, Bull. U. S. Fish Comm., vol. 22, 1902 (1904) p. 515 (N. 28° 31' Lat. W.141° 4' Long. east of Hawaii).—Jordan and Jordan, Mem. Carnegie Mus., vol. 10, No. 1, 1922, p. 4 (Hawaii).

Glyphis glaucus Fowler, Mem. Bishop Mus. ~~Honolulu~~, vol. 10, 1928, p. 19 (Honolulu); Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 491 (reference).

Indian Ocean. Said to be closely allied to C. albionymus and C. divergens, but with different proportions and coloration.

Eulamia sorrah (Müller and Henle).

Syst.

Carcharias (Prionodon) sorrah (Valenciennes) Müller and Henle, Besch Plagiostomen, 1841, p. 45, pl. 16 (type locality, India; Java; Madagascar).

Carcharias sorrah Gümther, Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 480 (Hawaii).

Eulamia sorrah Fowler, Mem. Bishop Mus. ~~Honolulu~~, vol. 10, 1928, p. 19, pl. 1 A (Honolulu; Kauai; type of Carcharias phorcys); Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 491 (reference).

Carcharias phorcys Jordan and Evermann, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 163 (type locality, Honolulu).—Snyder, op. cit., vol. 22 1902(1904), p. 513 (Honolulu; Kanalei Bay, Kauai).—Jordan and Evermann, op. cit., vol. 23, pt. 1, 1903 (1905), p. 39, pl. 2 (type; Honolulu).

Callionymus grossi Ogilby

Callionymus grossi Ogilby, Proc. Roy. Soc. Queensland, vol. 23, pt. 1, p. 43, 1911 (type locality, Moreton Bay). — Mc Culloch, Austral. Mus. Mem., no. 5, pt. 3, p. 338, Nov. 28, 1929 (reference).

Callionymus (Calliurichthys) grossi Mc Culloch, Records Australian Mus., vol. 14, no. 1, p. 8, Feb. 28, 1923 (Cape Moreton). — Mc Culloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 173, July 7, 1925 (reference).

Depth 9 3/5 in length; head 4 1/5, width 5 1/2; snout 2 3/5 in head, eye 3, 1 1/5 in snout, close together; preopercular spine straight, inner edge with 7 to 9 subequal, antrorse serrulae, outer edge with strong denticle directed forward near base; occiput covered with smooth skin. Gill opening superior, opposite origin of first dorsal.

Clupea punctata Rüppell, Neue Wirbelth., Fische, 1835, p. 78, pl. 21, ig. 2 (type locality, Red Sea).

Harengula punctata Regan, Ann. Mag. Nat. Hist., ser. 8, vol. 19, 917, p. 390 (Taumotu).—Fowler, Proc. U. S. Nat. Mus., vol. 80, art. 6, 1932, . 2 (Taiohae).

Lateral line median, conspicuous.

D. IV – 9, first dorsal origin nearer snout tip than soft dorsal, first spine filamentous and reaches last dorsal ray, others not filamentous, second dorsal base somewhat longer than its distance from snout tip, last ray reaching to or slightly beyond caudal base; A. 8, origin below second dorsal ray; base less than its distance from mandible tip, last ray not reaching far back as last dorsal ray; caudal peduncle depth 1/3 in eye; pectoral rays 17, inserted below posterior half of spinous dorsal, middle rays longest, reach third or fourth dorsal ray; ventral reaches not quite to or beyond anal origin.

Golden brown above, dull yellow below, throat and ventral region silvery. Back and sides

[illegible] (Jordan and Gilbert).

Clupea thrissina Jordan and Gilbert, Proc. U. S. Nat. Mus., vol. 5, 382, p. 353 (type locality, Cape San Lucas, Lower California).

Sardinella thrissina Herre, Field Mus. Publ., no. 353, Zool. ser., vol. 21, April 15, 1936, p. 30 (South Seymour I.; Eden I., Galapagos Is.).

above lateral line with numerous lilac annuli about large as gill opening, often crowded together to form clusters of considerable size, and some of annuli with blackish central dot. Broad dusky band across caudal peduncle. An irregular series of dark brown spots along middle of side just below lateral line. Upper eyelids and occiput blackish. Spinous dorsal violet, with oblique wavy lilac dark-edged cross-bands, first spine with filament blackish. Second dorsal and anal yellowish gray, former with 3 series of oblong violet spots, membrane of last ray of latter clouded. Upper portion of caudal yellow, spotted with brown, lower portion violet with paler margin. Pectoral dull yellow, immaculate, Ventral

yellowish, ground color almost wholly obscured by violet dots, among which are scattered numerous white dark edged ocelli, and near tip few blackish spots.

Female? differs in general darker coloration above, clear golden brown replaced by violaceous brown, which extends further down sides, somewhat obscuring lateral series of spots and ending below in 12 or 13 short blunt extensions, which encroach on pure white of under parts. Fins with cross bands on first dorsal indistinct. Pectoral gray, alternately banded with gray and lilac.

Length 112 to 128 mm. (Ogilby.)

Queensland.

Callionymus lindsii Richardson

Callionymus lindsii Richardson, Voy. Sulphur, 3 chth., p. 64, pl. 37, figs. 3-4, 1844 (type locality, Pacific Ocean); 3 chth. China and Japan, p. 210, 1846 (China Seas; Canton). — Günther, Cat. Fish. Brit. Mus., vol. 3, p. 146, 1861 (types). — Bleeker, Ned. Tijds. Dierk., vol. 4, p. 127, 1873 (1874) (reference). — Veale, Philippine Journ. Sci., vol. 9, pt. 1, p. 79, 1914 (Hong Kong). — Chu, Biol. Bull. St. John's Univ., no. 1, p. 169, Jan. 1931 (reference).

24.80

depth 9 3/4; head to gill opening 4, width 1 1/10. Snout 2 1/4 in head; eye 3 1/3, 1 1/8 in snout, eyes contiguous; maxillary reaches 4/5 in eye, length 2 1/8 in head; top of head quite smooth; preopercular spine 3/5 of eye, curves up, with 2 smaller teeth, besides short outer antrorse basal spine anteriorly. Gill opening high, midway between eyes and first dorsal.

Lateral line single.

D. III — 9, I, first spine elongate or 3 in fish without caudal, first ray 2 1/6 in head to gill opening. Last ray 1 9/10; A. 9, I, first ray 2 1/10, last ray 2 1/5; least depth of caudal peduncle 5 1/4; pectorals 1, rays 19; ventral rays I, 5, fin 1 1/4 in head to gill opening; caudal 3 7/8 in rest of fish, rounded.

Poecilocephalus bonaparti Kaup, Cat. Apod. Fish, 1856, p. 5, fig. 3 (type locality, Amboyna).

Ophichthys bonapartii Schmeltz, Cat. Mus. Godeffroy, no. 7, 1879, p. 2 (Raiatea, Society Is.). —Pohl, op. cit., no. 9, 1884, p. 40 (Raiatea).

Ophichthus bonaparti Fowler, Mem. Bishop Mus., vol. 11, no. 5, 1931, p. 316 (reference).

Upper surface pale brown, obscurely and finely mottled by darker tint. Under surface whitish and spotless. Alternate milk white and black bars or spots cross first dorsal, and white specks on caudal. Other fins transparent and spotless.

Length 88 mm. (Richardson.)

China.

Brachysomophis crocodilinus (Bennett).

Ophisurus crocodilinus Bennett, Proc. Comm. Zool. Soc. London, 1833, 32 (type locality, Mauritius).

Brachisomophis crocodilinus Vaillant, Bull. Soc. Philom. Paris, ser. vol. 11, 1886-87, p. 52 (Tahiti).

Brachysomophis crocodilinus Fowler, Mem. Bishop Mus., vol. 10, 1928, 46 (compiled); vol. 11, no. 5, 1931, p. 316 (reference).

Ophichthys crocodilinus Schmeltz, Cat. Mus. Godeffroy, no. 7, 1871, p. 59 (Tahiti).--Günther, Journ. Mus. Godeffroy, vol. 9, pt. 17, 1916, p. 398 Tahiti).

Brachisomophis horridus Kaup, Cat. Apod. Fish, 1856, p. 9, fig. 6 type locality, none given; Tahiti).

2482

Callionymus inversicoloratus Seale

Callionymus inversicoloratus Seale, Philippine Journ. Sci., vol. 4, p. 538, 1909 (type locality, Samal). — Rojas and Martin, Departm. Agric. Comm. Manila, Techn. Bull. 6, p. 240, 1937 (reference).

Callionymus japonicus Houttuyn

Callionymus japonicus Houttuyn, Verh. Holland. Maatsch. Wet. Haarlem, vol. 20, p. 312, 1782 (type locality, Nagasaki). — Bonnaterre, Tabl. Ichth., pl. 44, 1788 (Japan). — Thunberg, Kon. Vet. Acad. Handl. Stockholm, vol. 12, p. 30, pl. 1, fig. 1, 1792 (Japan). — Gmelin, Syst. Nat. Linnaeus, pt. 1, p. 1155, 1789 (copied).

— Walbaum, Artedi Pisc., vol. 3, p. 613, 1792 (copied). — Forster, Fauna Indica, p. 14, 1795 (reference). — Lacepède, Hist. Nat. Poiss., vol. 2, pp. 327, 337, 1800 (Japan). — Schneider, Syst. Ichth. Bloch, p. 40, 1801 (Japan).

— Jordan and Snyder, Annot. Zool. Japan., vol. 3, p. 111, 1901 (Yokohama; Nagasaki). — Jordan and Thompson, Bur. Coast Geod. Surv., vol. 6, pt. 4, p. 294, fig. 71, pl. 1914 (Misaki). — Jordan and Hubbs, Mem. Carnegie Inst., vol. 10, no. 2, p. 338, Nov. 28, 1929 (reference). — McCulloch, Austral. Mus. Mem., no. 5, pt. 3, p. 338, Nov. 28, 1929 (reference).

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Callionymus (Callurichthys) japonicus Mc Culloch, Records Austral. Mus., vol. 14, No. 1, p. 18, Feb. 28, 1923 (Lord Howe Island) - Biol. Res. Endeavour, vol. 5, pt. 4, p. 196, June 8, 1926 (no data)

= Callionymus (Callurichthys) japonicus Mc Culloch, ←

Mc Culloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 173, July 7, 1925 (reference).

hanos chanos (Forskål).

Mugil chanos Forskål, Descript. Animal., 1775, pp. 14, 74 (type locality, Djedda, Red Sea).

Chanos chanos Steindachner, Denkschr. Akad. Wiss. Wien, vol. 70, 1901, p. 514 (Honolulu). —Jenkins, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 432 (Honolulu).—Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 28, 1904, p. 124 (Honolulu).—Jordan and Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 56, fig. 10 (Moanalua, Honolulu).—Günther, Journ. Mus. Godeffroy, vol. 8, pt. 16, 1909, p. 387 (Hawaiian Is.; Society Is.).—Kendall and Goldsborough, Mem. Mus. Comp. Zool., vol. 26, 1911, p. 243 (Makemo and Nihau, Taumotus).—Fowler, Bishop Mus. Bull., no. 38, 1927, p. 5 (Fanning I.; Christmas I.); Mem. Bishop Mus., vol. 10, 1928, p. 28, pl. 1 B (Honolulu; Oahu; Makemo); vol. 11, no. 5, 1931, p. 315 (Honolulu); vol. 11, no. 6, 1934, p. 386 (Hawaii).—Herre, Field Mus. Publ., no. 353, Zool. ser. vol. 21, April 15, 1936, p. 27 (Nukuhiva, Marquesas).

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Callionichthys japonicus Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 25, p. 942, fig. 2, 1903 (Nagasaki; Wakanoura). — Franz, Abhandl. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, p. 84, 1910 (Yokohama, Aburatsubo, Misaki). — Chu, Biol. Bull. St. John's Univ., no. 1, p. 168, Jan. 1931 (reference). — Tanaka, Jap. Fish. Life Colours, no. 338, 1933. — Fowler, Mem. Bishop Mus., vol. 8, p. 422, 1928 (compiled).

Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 373, fig. 330, 1913 (reference). — Jordan and Thompson, Mem. Carnegie Inst., vol. 6, no. 4, p. 294, fig. 71, Sept. 1914 (Misaki). — Jordan and Hubbs, Mem. Carnegie Inst., vol. 10, no. 2, p. 316, June 27, 1925 (Tokyo; Wakanoura; Kagoshima Bay; Misaki). — Tanaka, Journ. Faculty Sci. Imp. Tokyo, Sect. 4, Zool., vol. 3, pt. 1, p. 40, Nov. 4, 1931 (reference). — Schmidt, Trans. Pac. Committee Acad. Sci. U.S.S.R., p. 141, 1931 (Kagoshima; Nagasaki; Japan).

2486

Callionymus reevesii Richardson, Zool. Voy. Sulphur, Fishes, p. 60, pl. 36, figs. 1-3 (not 4), 1844 (type locality, China Seas); Ichth. China and Japan, p. 210, 1846 (Hong Kong; Macao). — Bleeker, Verh. Batavia. Genoot. (16)
(Nat. Ichth. Japan), vol. 25, p. 44, 1853 (Nagasaki); Nat. Tijds. Ned. Indie, vol. 5, p. 244, 1853 (Ceram); Act. Soc. Sci. Ind. Neerl. (Jap.), vol. 3, p. 19, 1858 (Japan); (Celebes) vol. 8, p. 42, 1860 (Celebes); Ned. Tijds. Dierk., vol. 2, p. 149, 1865 (Bouro); p. 191 (Ceram), p. 292 (Amboina); Verhand. vol. 4, p. 127, 1873 (1874) (reference); Verhand. Kon. Akad. Wet. Amsterdam (Jap.), vol. 18, p. 18, 1879 (reference).

Callionichthys reevesii Evermann and Leale, Bull. Bur. Fisher., vol. 26, p. 103, 1906 (1907) (Bulan). — Jordan and Richardson, Philippine Journ. Sci., p. 55, 1910 (reference). — Royas and Martin, Depart. Agric. Comm., Manila, Techn. Bull. 6, p. 241, 1937 (reference).

— Chu, Biol. Bull. St. John's Univ., no. 1, p. 168, Jan. 1931 (reference).

2487

Callionymus belcheri Richardson, Zool. Voy. Sulphur, vol. 1, p. 62, pl. 37, figs. 1-2, 1844 (type locality, Pacific Ocean). — Bleeker, Ned. Tijds. Dierk., vol. 2, p. 58, 1865 (Amoy); Verslag. Kon. Akad. Wet. Amsterdam, Afd. 2, vol. 14, p. 85, 1879. — McCulloch, Austral. Mus. Mem., No. 5, pt. 3, p. 339, Nov. 28, 1929 (Queensland). — Day, Fishes of India, pt. 2, p. 322, 1876. Callionymus (callionichthys) belcheri McCulloch, Brit. Mus. Endeavour, vol. 5, pt. 4, p. 199, June 1929 (N. E. of Australia & Arafura Sea).

Callionymus longicaudatus Schlegel, Fauna Japonica, Poiss., pts. 7-9, p. 151, pl. 79, fig. 1, 1845 (type locality, Japan). — Bleeker, Act. Soc. Sci. Ind. Neerl. (Japan), vol. 3, p. 17, 1857 (Japan). — Günther, Cat. Fishes Brit. Mus., vol. 3, p. 148, 1861 (Pacific; type of Callionymus belcheri); China, Rep. Voy. Challenger, vol. 1, pt. 6, p. 44 (South of New Guinea). — Martens, Preuss. Exped. Ost Asien, vol. 1, p. 393, 1876 (Nagasaki). — Günther, Day, Fauna British India, Fishes, vol. 2, p. 303, 1889. — Waite, Phelum. Rep. Thetis Exped., p. 60, 1898. — Weber, Siboga Exped., vol. 65, Fische, p. 525, 1913 (off Waigiu). — Fischer, J. Fishes of Zanzibar, p. 76, 1866 (Zanzibar).

Callionymus curvicornis (part) Günther, op. cit., vol. 3, p. 145, 1861 (reference).

Callionymus longecaudatus Károli, Termesz. Füzetek, Budapest, vol. 5, p. 168, 1881 (Nagasaki; Kobe). — Bleeker, Verh. Kon. Akad. Wet. Amsterdam (Jap.), vol. 18, p. 18, 1879 (reference).

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Callyonymus longecaudatus Lyström.
Bih. Svensk. Vet.-akad. Handl.
Stockholm, bd. 11, afd. 4, no. 4. p. 36.
1887 (Nagasaki).

Halosauropsis proboscidea Gilbert

Halosauropsis proboscidea Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 612, pl. 76 (type locality, Kaiwi Channel, between Molokai and Oahu, in 460 to 470 fathoms; Kaiwi Channel and Kauai, in 438 to 470 fathoms).--Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 35 (compiled).

Aldrovandia proboscidea Gilbert, op. cit., pl. 76 (error).

2489

Callionymus affinis (not Regan, 1908) Gilby, New Fish. Queensland Coast, p. 134, 1910 (type locality, off Cape Moreton, Queensland).

Callionymus (Calliurichthys) japonicus var. Scaber Mc Culloch, Biol. Res. Endeavour, vol. 5, pt. 4, p. 197, June 8, 1926 (type locality, Lord Howe Island).

Calliurichthys numeri Tanaka,

841, p. 196 (type locality, Hawaiian Islands).—Valenciennes, Hist. Nat. Poiss., ol. 19, 1846, p. 144 (Honolulu).

Chanos chloropterus Kner, Reise Novara, Fische, vol. 1, pt. 5, 1865, p. 341 Tahiti).

Chanos salmoneus Günther, Rep. Voy. Challenger, vol. 1, pt. 6, 1880, . 61 (Honolulu).—Vaillant, Bull. Soc. Philom., Paris, ser. 7, vol. 11, 1886-7, p. 53 (Tahiti).

2490

Callionymus kaianus Günther

Callionymus kaianus Günther, Rep. Voy. Challenger, vol. 1, pt. 6, p. 44, pl. 19, fig. B, 1880 (type locality, Ki Islands, in 129 fathoms). — Alcock, Cat. Deep Sea Fish. Indian Mus., p. 74, 1899. — Regan, Trans. Linn. Soc. London, ser. 2, vol. 12, Zool. p. 248, May 1908 (Vaya de Malha Banks, order, 23 fathoms, Indian Ocean). — Weber, Siboga Exped., vol. 57, Fische, p. 524, 1913 (Madura Sea, 100 meters). depth 10; head to gill opening 4 1/3. Snout 3 in head, eye 2 1/2 (description gives snout and eye each 4 in head), greater than snout, shown as contiguous, eyes well invading upper profile of head; preopercular spine shorter than eye, ending in 3 hooks, of which hindermost points backwards and middle one upwards, both →

being barbed, and third very small. Occipital region granulated on each side. Gill opening reduced to a small foramen on upper side of neck.

Lateral line single.

D. IV — 9, I, first spine prolonged or 3 3/7 in fish to caudal base, fourth spine 3 1/4 in head, first ray 1 3/5, last ray 1 1/10; A. 9, I, first spine 3 1/2, last ray 1 2/7; least depth of caudal peduncle 6; caudal 3 1/4 in rest of fish; pectoral 1 1/4, rays 15?; ventral rays I, 5, fin 1 1/10 times head.

Reddish white, with irregular rounded violet spots along middle of side of body. Lunate black spot between third and fourth dorsal spines. Second dorsal ornamented with large subocellated and inframarginal bands.

(Günther).

Length 177 mm.

Arafura Sea, Indian Ocean.

Dasyatis latus (Garman).

Trygon lata Garman, Bull. Mus. Comp. Zool., vol. 6, 1880, p. 170 (type locality, Hawaiian Islands).

Dasibatis lata (Garman) Jordan and Gilbert, Bull. U. S. Nat. Mus., no. 16, 1882 (1883), p. 67 (type).

Dasyatis lata Jordan and Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 47 (copied). —Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 24 (type of D. sciera).

Dasyatis latus Fowler, Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 505 (reference).

Dasybatus latus Garman, Mem. Mus. Comp. Zool., vol. 36, 1913, p. 383, pl. 32, figs.1 and 2 (type).

Dasyatis sciera Jenkins, Bull. U. S. Fish Comm., vol. 22, 1902(1903), p. 421, pl. 1, fig. 2 (type locality, Honolulu). —Snyder, op. cit., vol. 22, 1902 (1904), p. 515 (Honolulu).—Jordan and Evermann, op. cit., vol. 23, pt. 1, 1903 (1905), p. 47, pl. 4, fig. 2 (type).

2492

Calliomymus kellersi Fowler and Bean

Calliomymus kellersi Fowler and Bean, Proc. U. S. Nat. Mus., vol. 71, art. 10, p. 12, fig. 2, 1927 (type locality, Benkoelen, Sumatra).

Depth 6 1/8; head 2 1/8, width 1 1/2. Snout 4 in head; eye 4, 1 2/3 in snout, 1 in interorbital; maxillary reaches opposite front eye edge; length 3 in head; bands of fine teeth in jaws rather narrow; interorbital 4, level. Gill opening small, above pectoral origin. Preopercle limb robust, compressed, with 5 strong teeth above, all directed upward.

Skin smooth, naked. Several postocular cranial patches of radiating striae covered with

thin skin. Lateral line superior on trunk, median along side of tail.

D. IV, 9, I, first spine 3 1/8 in head, second ray 3; A. 9, I, first ray 4, last ray 3; caudal 1 3/4, hind edge truncate; least depth of caudal peduncle 4 1/2; pectoral rays 22, fin with broad base, reaches anal, fin length 1 2/3 in head; ventral 1 3/4, rays I, 5.

Grayish brown, sides and lower lateral regions with dull gray shades. Belly and under surface of head grayish white. Balks and upper surface of head with numerous obscurely defined dots, specks and variable broken lines of dusky gray. Spinous dorsal neutral black. Soft dorsal and anal with many as 4 dark spots on each ray, first

otherwise light grayish. Caudal similar, but with a few more spots. Pectoral pale, upper rays with dark spots. Ventral neutral, dusky neutral, black terminally.

R. M. Z. M., No. 87935. Benkoelen, Sumatra. November 1925. Lieut. H. C. Kellers. Length 73 mm. Type.

Related to Calliomymus operculariodes Bleeker, but differs in that the interorbital width equals eye, whereas in Bleeker's species the eye is contained twice in the same width; also Bleeker's species is blackish.

Callionymus kitaharae Jordan and Seale

Callionymus kitaharae Jordan and Seale, Proc. U. S. Nat. Mus., vol. 30, p. 148, fig. 6, 1906 (type locality, Harbor of Nagasaki). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 375, fig. 334, 1913 (reference).

Vinciguerria attenuata (Cocco).

Scopelus or Maurolicus attenuatus Cocco, Nuovi Ann. Sci. Bologna, vol. 2, 1838, p. 193, pl. 8, fig. 3 (type locality, Messina, Italy).

Vinciguerria attenuata Fowler, Mem. Bishop Mus., vol. 10, 1928, p.34 (Cape Martin, Nukuhiva I.).

Zalarges nimbarius Jordan and Williams, Proc. Cal. Acad. Sci., 1895 p. 793 (type locality, Northeast of Hawaii).

Vinciguerria lucetia Gilbert, Mem. Mus. Comp. Zool., vol. 26, no. 6 1908, p. 237 (near Marquesas Is.).

Zalarges lucetius Snodgrass and Heller, Proc. Wash. Acad. Sci., vol 6, Jan. 31, 1905, p. 348 (from stomach of Thunnus caught few degrees north of the Galapagos).

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Callionymus limiceps Ogilby

Callionymus limiceps Ogilby, Ann. Queensland Mus., No. 9, p. 35, Oct. 14, 1908 (type locality; Moreton Bay, Queensland). — Mc Culloch, Rec. Austral. Mus., vol. 14, No. 1, p. 9, pl. 3, fig. 1, Feb. 28, 1923 (near Cape Capricorn, Queensland); Biol. Res. Endeavour, vol. 5, pt. 4, p. 203, June 8, 1926 (5 miles south-east from Boomerang Hill, Fraser I.; 17-20 miles north-west from Lady Elliot I.; 13 miles south-east from Cape Capricorn; 7-10 miles north-west of Hummocky I.; 11-13 miles north-west of Pinnacle Peak, Percy Is.). — Mc Culloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 173, July 7, 1925 (reference). — Mc Culloch, ~~Mem. Queensland Mus., vol. 8, pt. 3, p. 340, July 7, 1925~~ Mem. Queensland Mus., No. 5, Nov. 28, 1929 (reference).

Callionymus limiceps var. sublaevis Mc Culloch, op. cit., p. 204 (type locality, 7-10 miles north west of Hummocky Island, near Cape Capricorn; 14-16 fathoms). — Mc Culloch, op. cit., No. 5, pt. 3, p. 340, Nov. 28, 1929 (reference).

Harengula vittata (Valenciennes).

Clupeonia vittata Valenciennes, Hist. Nat. Poiss., vol. 20, 1847, p. 257 (type locality, Vanikoro).

Harengula vittata Regan, Ann. Mag. Nat. Hist., ser. 8, vol. 19, 1917, p. 392 (Raiatea, Society Is.).

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Callionymus lunatus Schlegel

Callionymus lunatus Schlegel, Fauna Japonica, Poiss., pts. 7-9, p. 155, pl. 78, fig. 4, 1845 (type locality, Japan ~~Nagasaki~~).
— Günther, Cat. Fish. Brit. Mus., vol. 3, p. 146, 1861 (copied). —
Bleeker, Ned. Tijds. Dierk., vol. 4, p. 153, 1873 (China); Verh. Kon. Akad. Wet. Amsterdam (Jap.), vol. 18, p. 18, 1878 (name only). —
Günther, Rep. Voy. Challenger, vol. 1, pt. 6, p. 28, 1880 (Port Jackson).
— Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 25, p. 949, fig. 5, 1903 (Nagasaki, Wakanoura, Yamaguchi, Niigata); — Jordan and Thompson, Mem. Carnegie Mus., vol. 6, no. 4, p. 294, fig. 70, Sep. 1914 (Kinkaki); — Jordan and Hubbs, Mem. Carnegie Inst., vol. 10, no. 2, p. 316, June 27, 1925 (Tokyo; Mikawa Bay; Misaki; Hoo).
— Karoli, Termesz. Füzetek, Budapest, vol. 5, p. 168, 1881 (1882) (Yokohama; Nagasaki).
— Jordan and Snyder, Annot. Zool. Japan., vol. 3, p. 111, 1901 (Nagasaki).
— McCulloch, Records Austral. Mus., vol. 14, no. 1, p. 8, Feb. 25, 1923 (questions Günther's Port Jackson record).
— Tanaka, Journ. Faculty Sci. Imp. Tokyo, Sect. 4 Zool., vol. 3, pt. 1, p. 52, Nov. 4, 1931 (reference); Schmidt, Trans. Pac. Committee Acad. Sci. U.S.S.R., no. 142, 1931 (Nagasaki).

Callionichthys lunatus Franz, Abhandl. Kon. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, p. 84, 1910 (Sagami Bay, Aburatsubo).

Calliongnus inframundus Gill, Proc. Acad. Nat. Sci. Philadelphia, April 1859, p. 129 (Japan) — Bleeker, (type locality, Verh. Kon. Akad. Wet. Amsterdam, (Jap.), vol. 18, p. 18, 1879 (name only)

Callionymus ornatipinnis Regan, Ann. Mag. Nat. Hist. London, ser. 7, vol. 15, p. 23, pl. 3, 1905 (type locality, Inland Sea of Japan) — Jordan, Tanaka, Snyder, Journ. College Sci., vol. 33, art. 1, p. 375, fig. 334, 1913 (reference).

Callionymus huguenii Bleeker

Callionymus huguenii Bleeker, Act. Soc. Sci. Ind. Neerl. (Japan.), vol. 5, p. 7, pl. 2, fig. 1, 1858 (type locality, Nagasaki); Callionymus huguenii Günther, Cat. Fish. Brit. Mus., vol. 3, p. 145, 1861 (copied). — Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 25, p. 953, 1903 (copied). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 377, 1913 (reference).

~~Callionymus huguenini Bleeker~~, Verh. Kon. Akad. Wet. Amsterdam (Jap.), vol. 18, p. 18, 1879 (reference); Proc. Fourth Pac. Sci. Congress, p. 460, 1929 (~~Schmidt, Trans. Pac. Com~~); Trans. Pac. Committee Acad. Sci. U.S.S.R., p. 144, 1931 (Misaki).

Callionymus huguenei Jordan and Snyder, Annot. Zool. Japan., vol. 3, p. 111, 1901 (Nagasaki).

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Depth 7 1/2; head to gill opening 3 1/3, width 2 1/8. Snout 3 in head; eye 3, subequal with snout, greatly exceeding interorbital; maxillary reaches 9/10 to eye, length 4 in head; preopercular spine not longer than eye, with small antrorse outer basal spine, hind margin armed with 3 large curved denticles; interorbital 3 in eye. Gill opening superior, before pectoral. Dorsal origin first. Lateral line distinct, with nuchal intersection.

D. IV–10, spines slender and end in filaments, first 2 1/4 to caudal base; first ray 3 1/8 in head, last ray 2 1/4; A. 10, first ray 3 2/5, last ray 2 1/2; caudal 2 2/3 in rest of fish, pointed behind; least depth of caudal peduncle 5 2/3 in head; pectoral 1 1/3, rays 17; ventral rays I, 5, fin 1 1/2 in head. Anal papilla elongate, conic.

Ophichthys calamus Günther, Cat. Fish. Brit. Mus., vol. 8, 1870, p. 70 ype locality, Freemantle, Australia).—Fowler and Ball, Bishop Mus. Bull., . 26, 1925, p. 6 (Lahaina, Maui).

Ophichthus calamus Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 45 ahaina specimen).

Microdonophis macgregori Jenkins, Bull. U. S. Fish Comm., vol. 22, 02 (1903), p. 422, fig. 2 (type locality, Lahaina, Maui).—Jordan and Ever- nn, op. cit., vol. 23, pt. 1, 1903 (1905), p. 82, fig. 18 (type).

Body above rose green, below pearly. Head, back and sides above with olivaceous clouding and variegated with deep colored pearly ocelli. Cheeks and opercle with pale blue ocelli ringed with violaceous. Iris grey, dusted with brown. Fins rose hyaline, first dorsal and pectorall immaculate. Second dorsal with numerous small scattered brown spots. Anal edged with blackish brown. Caudal rays with 5 or 6 transverse series of brown spots. Ventral with broad, diffuse violaceous margin.

Length 79 mm. (Bleeker.)

Ophisurus semicinctus Lay and Bennett, Voy. Beechey, Zool., 1839, p. , pl. 20, fig. 4 (type locality, Oahu?).

Leiuranus semicinctus Fowler, Proc. Acad. Nat. Sci. Phila., 1900, p. 4 (Hawaiian Is.).—Snyder, Bull. U. S. Fish Comm., vol. 22, 1902 (1904), p. 5 (Honolulu).—Fowler, Proc. Acad. Nat. Sci. Phila., 1912, p. 13 (Hawaiian); Copeia, no. 112, Nov. 20, 1922, p. 82 (Hawaiian Is.).—Fowler and Ball, shop Mus. Bull., no. 26, 1925, p. 6 (Johnston I.).—Fowler, Mem. Bishop s., vol. 10, 1928, p. 44 (Hawaiian Is.; Johnston I.; Hawaii).

Stethopterus semicinctus Fowler, op. cit., vol. 11, no. 6, 1934, p. 3 (reference).

Ophichthys colubrinus (not Boddaert) Seale, Occas. Pap. Bishop Mus., l. 1, no. 5, 1902, p. 21 (Honolulu).

2502

Callionymus macdonaldi Qgilby

Callionymus macdonaldi Qgilby, Ann. Queensland Mus., no. 10, p. 56, pl. 6, fig. 2, 1911 (type locality, Moreton Bay, Queensland). — Mc Culloch, Records Austral. Mus., vol. 16, no. 1, p. 9, Feb. 28, 1923 (reference); Biol. Res. Endeavour, vol. 5, pt. 4, p. 205, pl. 54, fig. 1, June 8, 1926 (Moreton Bay). — Mc Culloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 173, July 7, 1925 (reference). — Mc Culloch, Austral. Mus. Mem., no. 5, pt. 3, p. 338, Nov. 28, 1929 (reference). — Whitley, Australian Zoologist, vol. 5, pt. 4, p. 356, March 24, 1929 (Manning R., Taree).

ptostomias macronema Gilbert.

Leptostomias macronema Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 1903 (1905), p. 607, pl. 72, fig. 3 (type locality, Near Niihau, in 319 451 fathoms).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 34 (type).

2503

Callionymus maldivensis Regan

Callionymus maldivensis Regan,
Trans. Linn. Soc. London, Ser. 2, vol. 12,
Zool., p. 247, pl. 30, fig. 3, May 1908
(type locality, Maldives, H.M.S. Hirondelle,
30 to 36 fathoms).

Depth 7 1/8; head to gill opening 3 1/4
to 4. Snout 2 1/8 in head; eyes 3 to
3 1/2, 1 3/4 in snout, eye contiguous; maxillary
reaches 7/8 to eye, length 2 7/8
in head; eye entering upper profile
of head; preopercular spine
straight, with serrated inner
edge and an outer antrorse
extension at base; occipital
region rugose, not covered
by skin. Gill opening small, superior.
Lateral line single.
D. IV — 9, I, first spine in

Manta birostris (Walbaum).

Raia birostris Walbaum, Artedi Pisc., vol. 3, 1792, p. 535 (on Diabolus marinus Willughby, Historia Pisc., Append., 1686, p. 5, pl. 9, fig. 3; no type locality.—Catesby, Nat. Hist. Carolinas, Append., 1771, p. 32, Carolinas).

Manta birostris Snodgrass and Heller, Proc. Wash. Acad. Sci., vol.6, Jan. 31, 1905, p. 346 (Galapagos Is.).—Fowler, Occas. Pap. Bishop Mus., vol. 8, no. 7, 1923, p. 375 (Honolulu); Bishop Mus. Bull., no. 38, 1927, p. 4, pl. 1, figs. d and g (Fanning I.); Mem. Bishop Mus., vol. 10, 1928, p. 26 (Oahu; Honolulu); Proc. Fourth Pac. Sci. Congr, Java, 1929, p. 508 (reference); Proc. U. S. Nat. Mus., vol. 80, art. 6, 1931, p. 2 (Ua Huka I.; Obi Tufa Bay, Eire I.; Shavy Bay, Ua Huka I., Marquesas); Mem. Bishop Mus., vol. 11, no. 6, 1934, p. 386 (reference).—Herre. Field Mus. Publ., no. 353, Zool. ser. vol. 21, April 15, 1936, p. 25 (Cocos I.; Channel between Albemarle and Narborough Is.; Tagus Cove and Turtle Bay, Albemarle I., Galapagos Is.).

male extended in filament, or length 2 1/4 in fish to caudal base, second and third spines subequal or 1 1/6 in head to gill opening; first dorsal ray 2, last 1 1/2 or not reaching caudal base as laid back; A. 8, I, first ray 4, last ray 1 7/8; caudal in male elongate, long as fish; least depth of caudal peduncle 5 3/4 in head; pectoral 1 3/7, rays 14?; ventral rays I, 5, fin 1 in head.

Head and upper part of body spotted and marbled. Five or 6 indistinct dark cross-bars on back. Males with oblong blackish blotch on throat. Spinous dorsal, in male, with several oblique dark stripes or series of spots, and with small black spot at tip of third ray. Spinous dorsal

Stoasodon narinari Jordan and Evermann, Bull. U.S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 49, fig. 7 (Honolulu; Hilo).

Raja edentula (Forster)Lichtenstein, Descript. Animal., 1944, pp. 227, 256 (type locality, Tahiti; Tanna).

Goniobatis meleagris Agassiz, Proc. Boston Soc. Nat. Hist., vol. 6, 1859, p. 385 (type locality, Hawaiian Islands).

Aetobatus flagellum Fowler, Proc. Fourth Pac. Sci. Congr. Java, 192[illegible] p. 507 (reference).

in female with 3 or 4 irregular dark oblique stripes and with a large spot on upper part of membrane between third and fourth rays. Second dorsal with 3 or 4 series of oblong dark spots. Caudal with dark cross bars. Outer half of anal blackish.

Length 160 mm. (Regan.)

Indian Ocean. Said to be closely related to Callionymus margaretae Regan from Muscat, which has a larger eye, the occiput covered with skin, and the coloration of the spinous dorsal different.

Aetobatus narinari (Euphrasen).

Raia narinari Ruphrasen, Kon. Svensk. Vet. Akad. Handl. Stockholm, vol. 11, 1790, p. 217, pl. 10 (type locality, St. Bartholomew Island, West Indies).

Raja narinari Schneider, Syst. Ichth. Bloch, 1801, p. 361 (Tahiti).

Aetobatus narinari Seale, Occas. Pap. Bishop Mus., vol. 1, no. 5, 1902, pp. 20, 22 (Honolulu).—Jenkins, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 421 (Honolulu). —Snyder, op. cit., vol. 22, 1902 (1904), p. 515 (Honolulu).—Fowler and Ball, Bishop Mus. Bull., no. 26, 1925, p. 5 (Johnston I.).—Jordan, Evermann, Tanaka, Proc. Cal. Acad. Sci., ser. 4, vol. 16, Nov. 14, 1927, p. 651 (Honolulu).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 26 (Honolulu; Johnston I.); Proc. Fourth Pac. Sci. Congr.Java, 1929, p. 507 (reference). —Herre, Journ. Pan Pac. Res. Inst., vol. 7, no. 1, Jan.-March 1932, p. 2 (Tahiti).—Fowler, Mem. Bishop Mus., vol. 11, no. 6, 1934, p. 386 (reference).—Field Mus. Publ., no. 353, Zool. ser. vol. 21, April 15, 1936, p. 24 (Tahiti material).

2506

Callionymus margaretae Regan

Callionymus margaretae Regan
Journ. Bombay Nat. Hist. Soc.,
vol. 16, no. 2, p. 326, pl. 3, fig. 3,
1905 (type locality, Mutrcat,
in 15 to 30 fathoms).

Depth 8; head 3 to 3 1/3, width
in fish to caudal base. Snout 3 1/8
in head; eye 3 1/8 (description given
2 2/3, equals snout; eyes contiguous;
maxillary reaches opposite front
eye edge; length 3 1/5 in head;
eye well invading upper profile
of head; preopercular spine
straight, with serrated inner
edge and forwardly directed
spinous extension at base.

Lateral line single.

D. IV—9 (figured shows but
8 soft rays), first dorsal in

Sphyrna lewini (Griffith).

Zygaena lewini Griffith, Animal Kingd. Cuvier, vol. 10, 1834, p. 640, pl. 1 (type locality, South coast of New Holland).

Sphyrna (Sphyrna) lewini Mc Culloch, Austral. Mus. Mem., no. 5, pt. 1, June 29, 1929, p. 14 (reference).

Sphyrna oceania Garman, Mem. Mus. Comp. Zool., vol. 36, 1913, p. 158 (type locality, Society Islands).--Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 23 (compiled); Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 495 (reference).

male with first ~~ray~~ spine produced in filament or 2 3/5 in fish without caudal, second dorsal with equal rays, first 1 4/5 in head and last 1 3/5 or reaching caudal base when laid back; D. 8, first ray 4 1/5 in head, last 1 4/5; least depth of caudal peduncle 6 3/5; caudal in male elongate, nearly long as rest of fish; pectoral 1 1/4 in head; ventral 1 1/10.

Body with dark spots and markings. Oblong blackish or triangular patch on throat in male. First dorsal blackish, with white bars anteriorly and white spots posteriorly. Second dorsal with 3 or 4 rows of oblong dark spots. Anal with blackish marginal band, which is continued on lower part of

olephorus japonicus (Houttuyn).

Atherina japonica Houttuyn, Verh. Holland. Maatsch. Wet. Haarlem,
ol. 20, pt. 2, 1782, p. 340 (type locality, Japan).

Stolephorus japonicus Herre, Journ. Pan Pac. Res. Inst., Honolulu,
ol. 7, no. 1, Jan.-March 1932, p. 30 (Tahiti); Field Mus. Publ., no. 353,
ool. ser.,vol. 21, April 15, 1936, p. 33 (Tahiti material).

caudal. Caudal with vertical series of oblong dark spots.
(without caudal)
Length, 47 (mm). (Regan.
Arabian Sea. Said to be very similar to Calliomymus leptsicus, but with a larger eye, without the elevated first dorsal fin and the striped throat of the males of that species.

istius brasiliensis (Quoy and Gaimard),

Scymnus brasiliensis (Cuvier) Quoy and Gaimard, Voy. Uranie, Zool., 9, p. 198 (type locality, Brazil).

Isistius brasiliensis Garman, Mem. Mus. Comp. Zool., vol. 24, 1899, 34, pl. 1, fig. 1, pls. 2 and 3, pl. 69, fig. 2 (N. 2° 34' Lat. W. 92° 6' Long., 1360 fathoms [Galapagos Islands]).—Fowler and Ball, Bishop Mus. Bull., no. , 1926, p. 5 (note).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 23 nolulu materials);Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 497 (refer- nce).

Squalus fulgens F.D.Bennett, Narrative Whaling Voy., vol. 2, 1940, p. 5 (type locality, S. 2 1/2° Lat. W. 163° Long. [west of Christmas Island or outh west from Jarvis Island]; N. 55° Lat. W. 110° Long. [probably W.140°; minous]).

Apristurus spongiceps (not Gilbert) Jordan and Jordan, Mem. Carnegie s., vol. 10, no. 1, 1922, p. 3 (Hawaii).

Echinorhinus brucus (not Bonnaterre)Fowler, Occas. Pap. Bishop Mus., l. 8, no. 7, 1923, p. 375 (Honolulu).

2509

Callionymus marleyi Regan

Callionymus marleyi Regan, Ann. Durban Mus., vol. 2, pt. 4, p. 201, fig. 4, 1919 (type locality, Durban, Natal) — Barnard, Ann. South African Mus., vol. 21, pt. 2, p. 446, Oct. 1927 (Natal). — Fowler, Proc. Acad. Nat. Sci. Philadelphia, vol. 86, p. 493, Nov. 6, 1934 (Natal).

Callionymus cooperi (not Regan 1908) Regan, Ann. Durban Mus., vol. 2, pt. 2, p. 77, 1918 (Natal).

depth 7; head 4, width 1. Snout 3 in head; eye 3 1/8, subequal with snout, 5 times narrow interorbital width; maxillary reaches eye, length 3 1/10 in head; teeth in villiform bands in jaws, none on palate or tongue; interorbital narrowly concave; preopercular spine little longer than eye, ends in spine and 5 more on inner edge. Gill opening small slit about size of pupil, level with same.

Skin smooth, covers striae on cranium. Lateral line complete, with connecting branch over caudal peduncle behind soft dorsal.

D. $\frac{IV}{III}$ — 9, $\frac{I}{I}$, first spine 1 1/10 in head, first ray 1 2/5, last ray 1 1/10; A. 8, $\frac{I}{I}$, last ray 1 1/4;

least depth of caudal pedencle 4 1/4; caudal 3 1/4 in rest of body, little convex behind; pectoral 3 3/4; ventral 3 1/4.

Light brown above, paler and with whitish reflections below. Back dusted with dusky dots, leaving irregular scattered pale spots or circles. Row of 4 or 5 slightly larger dusky spots close along below lateral line. Iris gray white. Under surfaces of body immaculate. Dorsals gray white, with dark gray pencilled lines, variably horizontal on soft dorsal and uppermost horizontal on spinous dorsal with basal variably vertical or transverse. Caudal with dark gray dots and short horizontal marginal ones terminally, lowest

ar black spot. Paired fins above with obscure darker specks or dots.

Natal.

A. N. S. P., one example. Natal. 1931. H. W. Bell Mailey. Length 96 mm.

2513

Callionymus marmoratus Peters

Callionymus marmoratus Peters, Archiv Naturg., p. 255, 1855 (type locality, Mozambique); — Günther, Cat. Fish. Brit. Mus., vol. 3, p. 150, 1861 (Mozambique); — Barnard, Ann. South African Mus., vol. 21, pt. 2, p. 447, Oct. 1927 (Mozambique ~~and~~ Fishes of Zanzibar, p. 76, 1866 (Zanzibar).

Callionymus pereleganus Bianconi, Spec. Zool. Mozambique, p. 263, Pisc. pl. 9, 1858 (type locality, Mozambique).

2514

Callionymus melanotopterus Bleeker

Callionymus melanotopterus Bleeker, Nat. Tijds. Ned. Indië, vol. 1, p. 31, 1851 (type locality, Batavia, Java); vol. 23, p. 108, 1861 (Banka).

— Günther, Cat. Fish. Brit. Mus., vol. 3, p. 139, 1861 (copied). — Bleeker, Verslag. Kon. Akad. Wet. Amsterdam, vol. 12, p. 32, 1861 (ser. 2, vol. 14, p. 92, 1879 (Singapore; Banka; Java; Celebes). — Fowler, Fauna Malaya, p. 222, 1937 (reference).

Callionymus fluviatilis Day, Fishes of India, pt. 2, p. 322, 1876 (type locality, Hooghly at Calcutta); Fauna British India, Fishes, vol. 2, p. 304, 1889.

Depth 9 to 10; head 3 to 3 2/5 — to end of preopercle spine (2515)
snout convex; eye 3 to 3 1/2 in head, subcontiguous; upper jaw strongly protractile; preopercular spine not or rather shorter than eye, well curved, at front outer base antrorse spine, and 4 or 5 strong unequal denticles - divergent on main spine; interorbital narrowly concave. Gill opening superior, before pectoral or first dorsal.

Lateral line distinct, with transverse nuchal intersection).

D. IV — 10, first dorsal higher than body, not or rather lower than highest rays of second dorsal; A. 10, like second dorsal; caudal little or not longer than head, rhomboid, acute to obtusely rounded behind; pectoral rays I, 17 or I, 18, rhomboid, median bifurcate; ventral I, 5. Anal papilla slender, conic.

Callechelys melanotaenia Bleeker.

Callechelys melanotaenia Bleeker, Atlas Ichth. Ind. Neerl., vol. 4,

64, p. 66, pl. (49) 193, fig. 2 (type locality, Amboyna).—Fowler, Mem.

shop Mus., vol. 10, 1928, p. 43 (Palmyra I.).

Body olivaceous above, sparsely dotted with brownish, below pearly. Iris greenish, pupil edge golden. First dorsal rose or rose hyaline, between second and third spines black ocellus ringed with yellow. ~~Dorsal rays~~ Second dorsal yellowish, base with obliquely longitudinal silvery bands. Anal rose, more or less dusted with brown and with broad brown margin, diminishing basally between rays oblique yellow band. Caudal hyaline rose, rays with numerous small oblong brownish spots, interradial membrane with rows of small oblong silvery spots.

Length 50 to 92 mm. (Bleeker.)

East Indies, Malaya.

India,

Callechelys marmoratus (Bleeker).

Dalophis marmorata Bleeker, Verh. Batav. Genoot. (Muraen.), vol. 25, 53, p. 37 (type locality, Siboga, West Sumatra).

Ophichthys marmorata Günther, Journ. Mus. Godeffroy, vol. 9, pt. 17, 10, p. 404 (Tahiti; Hawaii).

Callechelys marmoratus Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 42 onolulu; type of C. luteus); Proc. U. S. Nat. Mus., vol.80, art. 6, 1932, p. (Black Beach Anchorage, Charles I., Galapagos).

Callechelys guichenoti Kaup, Cat. Apod. Fish, 1856, p. 28, fig. 13 ype locality, Tahiti).

Callechelys luteus Snyder, Bull. U. S. Fish Comm., vol. 22, 1902 903), p. 86, pl. 8, fig. 1 (type).

2517

Callionymus muscatensis Regan

Callionymus muscatensis Regan,
Journ. ~~Asiatic~~ Bombay Nat.
Hist. Soc., vol. 16, No. 2, p. 326, pl.
3, fig. 2, 1905 (type locality,
Muscat, in 15 to 30 fathoms).

depth 7; head to gill opening 3 1/3.
(figure appears to show about
3). Snout 4 in head, eye 3
(description says "their diameter ~~length~~ 1/2
the length of head"), greater
than snout; maxillary reaches
about 1/8 in eye, length 3 7/8
in head; eyes contiguous, well
impinging on upper profile of
head; preopercular spine straight,
with both outer and inner
edges denticulated, inner edge
with 5 teeth, outer with 3 or 4,

Triaenodon obesus (Rüppell).

Carcharias obesus Rüppell, Neue Wirbelth. Fische, 1835, p. 64, pl. 1[illegible] fig. 2 (type locality, Djedda, Red Sea).

Triaenodon obesus Snodgrass and Heller, Proc. Wash. Acad. Sci., vol. 6, Jan. 31, 1905, p. 344 (Cocos I.).—Günther, Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 482 (Tahiti). —Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 22, fig. 7 (Laysan I.); Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 489 (reference).—Herre, Field Mus. Publ., no. 353, Zool. ser. vol. 21, April 15, 1936, p. 24 (Cocos I.).

the anterior of which is directed ~~outward~~ forward. Gill opening in front of upper edge of base of pectoral.

D. IV — 8, first fin elevated and spines extended in male, third spine 2 3/4 in fish without caudal, first ray 1 1/2 in head, last ray 2 1/5; A. 8, first ray 5, last ray 1 1/4; least depth of caudal peduncle 4 1/4; caudal in male elongate, 1 2/3 in rest of fish; pectoral 1 1/5 in head; ventral 1.

Grayish, with darker markings. Dorsal fins in male blackish and in female first dorsal with large oblong black spot between third and fourth rays. Second dorsal with series of spots on rays. Anal with dark margin. Caudal

inorhinus cookei Pietschmann.

Echinorhinus cookei Pietschmann, Bishop Mus. Bull., no. 73, 1930, p. fig. 1, pl. 1a and b (type locality, South coast of Kauai).—Fowler, Mem. hop Mus., vol. 11, no. 6, 1934, p. 386 (reference).

with dark cross bars or series of spots.

Length without caudal 35 mm.

(Regan.)

Arabian Sea. Said to approach Dactylopus in the structure of the preopercular spine.

ntroscyllium nigrum Garman.

Centroscyllium nigrum Garman, Mem. Mus. Comp. Zool., vol. 24, 1899, 28, pl. 1, fig. 2, pls. 4 and 5 (anatomy), pl. 69, fig. 1 (type locality, 7° to 6° Lat. W. 81° Long., in 546 to 555 fathoms [off Galapagos Islands]).

owler, Mem. Bishop Mus., vol. 10, 1928, p. 23 (type of C. ruscosum); Proc. rth Pac. Sci. Congr. Java, 1929, p. 496 (reference).

Centroscyllium ruscosum Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 1903 (1905), p. 580, fig. 230 (type locality, Near Kauai, in 418 to 429 fath s).

2520

Calliomymus nasutus Ine Cullock

Calliomymus (Calliurichthys) nasutus Ine Cullock, Biol. Res. Endeavour, vol. 5, pt. 4, p. 197, pl. 52, June 8, 1926 (type locality; 13 miles south-east from Cape Capricorn, Queensland, 13 fathoms).

Calliomymus nasutus Ine Cullock, Austral. Mus. Mem., No. 5, pt. 3, p. 339, Nov. 28, 1929 (reference).

novielia indica (Van Hasselt).

Engraulis indica Van Hasselt, Algem. Konst-en Letterbode, 1823, p.

(type locality, Java).—Günther, Journ. Mus. Godeffroy, vol. 8, pt. 16,

9, p. 377 (Tahiti).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 33

mpiled).

Anchoviella indica Fowler, op. cit., vol. 11, no. 6, 1934, p. 387

eference).

Callionymus neptunia (Veale)

Callionymus
~~Synchiropus~~ neptunia Veale, Philippine Journ. Sci., vol. 4, p. 539, 1909 (type locality, Balayan Bay, Luzon). — Rojas and Martin, Departm. Agric. Comm. Manila, Techn. Bull. 6, p. 241, 1939 (reference).

2522

Callionymus ocelligena McCulloch

Callionymus ocelligena McCulloch, Biol. Rep. Endeavour, vol. 5, pt. 4, p. 207, pl. 55, fig. 1, June 8, 1926 (type locality, Without data; Australian Mus. Mem., no. 5, pt. 3, p. 339, Nov. 28, 1929 ("no locality, perhaps from Queensland").

Anchoviella insularum (Jordan and Seale).

Stolephorus insularum Jordan and Seale, Bull. Mus. Comp. Zool., vol. 67, no. 11, May 1926, p. 381 (type locality, Tahiti).

Anchoviella insularum Fowler, Mem. Bishop Mus., vol. 11, no. 6, 1934 p. 387 (compiled).

Callionymus olidus Günther

Callionymus olidus Günther, Ann. Mag. Nat. Hist., London, ser. 4, vol. 12, p. 242, 1873 (type locality, Shanghai). — Jordan and Seale, Proc. U. S. Nat. Mus., vol. 29, p. 529, 1905 (Shanghai). — Chu, Biol. Bull. St. John's Univ., no. 1, p. 169, Jan. 1931 (reference).

Head 3 1/5. Preopercular spine nearly long as orbit, cylindrical, slightly curved, ending in from 4 to 6 hook-like extensions directed upwards; straight extension at base of spine points forwards. Gill opening very small foramen at upper surface of neck.

D. III or IV — 9; A. 9. Vent midway between end of snout and base of caudal.

Upper parts grayish, powdered with darker. First dorsal black, rays somewhat elongate in male.

Length 50 to 75 mm. (Günther.)

L. Shanghai.

2525

Callionymus orientalis Schneider

Callionymus orientalis Schneider, Syst. Ichth. Bloch, p. 41, pl. 6, 1801 (type locality, Tranquebar). — Eydlenciennes, Hist. Nat. Poiss., vol. 12, p. (222) 297, 1837 (copied). — Günther, Cat. Fish. Brit. Mus., vol. 3, p. 139, 1861 (copied). — ~~Day~~ Day, Fishes of India, pt. 2, p. 323, 1876 (compiled); Fauna British India, Fishes, vol. 2, p. 305, 1889.

— Bleeker, Verhand. Batavia. Genoot. (Bengal. Ind.) vol. 25, p. 52, 1853 (reference).

Callionymus papilio Günther

Callionymus papilio Günther, Ann. Mag. Nat. Hist., ser. 3, vol. 14, p. 197, 1864 (type locality, Melbourne). — Macleay, Proc. Linn. Soc. New South Wales, vol. 5, p. 627, 1881 (compiled). — Ogilby, Cat. Fish. New South Wales, p. 37, 1886. — Lucas, Proc. Roy. Soc. Victoria, ser. 2, vol. 2, p. 29, 1890 (reference). ~~— Macleay, Fish. New South Wales,~~ ed. 3, p. 77, 1934 (reference). — Waite, Mem. New South Wales Nat. Club, vol. 2, p. 51, 1904. — Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1907, p. 442 (1908) (Victoria). — McCulloch, Records Australian Mus., vol. 14, no. 1, p. 13, Feb. 28, 1923 (Port Jackson); Australian Mus. Mem., no. 5, pt. 3, p. 338, Nov. 28, 1929 (reference).

Callionymus lateralis (not Richardson 1844) Macleay, Proc. Linn. Soc. New South Wales, vol. 6, p. 628, 1881 (type locality, Port Jackson). — Johnston, Proc. Roy. Soc. Tasmania, 1890, p. 33 (1891).

Callionymus ocellifer Castelnau, Proc. Zool. Soc. Victoria, vol. 2, p. 49, 1873 (type locality, Hobson's Bay).

Callionymus macleayi Ogilby, Cat. Fish. New South Wales, p. 37, 1886 (on Callionymus lateralis Macleay). — Waite, Mem. New South Wales Nat. Club, vol. 2, p. 51, 1904.

alops cyprinoides (Broussonet).

Clupea cyprinoides ~~Bleeker~~, Tableau Ichth., 1782, no pagination, pl. pe locality, "Oceans between the tropics" [Jamaica; Antigua; Rio Janeiro] (not); na Island, Pacific).

Megalops cyprinoides Günther, Journ. Mus. Godeffroy, vol. 8, pt. 16, 09, p. 387 (Society Islands).--Herre, Field Mus. Publ., no. 353, Zool. Ser. , April 15, 1936, p. 25 (Peepete, Tahiti).

Clupea thrissoides Schneider, Syst. Ichth. Bloch, 1801, p. 424 (ex ype locality, Atlantic and Pacific Oceans) (on Broussonet).

Clupea setipinna (Forster) Valenciennes, Hist. Nat. Poiss., vol. 19, 46, p. 285 (type locality, Tahiti) (name in text).

2528

Calliongmus persicus Regan

Calliongmus persicus Regan, Journ. Bombay Nat. Hist. Soc., vol. 16, no. 2, p. 325, pl. 3 (c), fig. 1, 1905 (type locality, Persian Gulf; Mekran Coast, Muscat).

Depth 6 2/3 to 7 2/3; head 3 1/4 to 3 3/5, width 4 to 4 1/2 in body length to caudal base. Snout 3 1/2 in head, eye 3 to 3 1/2, subequal with snout, eyes contiguous, well invading upper profile of head, 3 4/5 in head; maxillary reaches front of eye, preopercular spine straight, inner edge serrated, and with forwardly directed basal spinous extension. Gill opening small, superior.

Lateral line single.

D. IV—9, in middle first dorsal elevated with spines extended as filaments and in female lowly

Sphyrna tudes (Valenciennes).

Zygaena tudes Valenciennes, Mem. Mus. Hist. Nat. Paris, vol. 9, 1822 p. 225, pl. 12, figs. 1a and b (type locality, Mediterranean; Cayenne; Coromandel).—Lay and Bennett, Voy. Beechey, Zool., 1839, p. 47 (Oahu).

Sphyrna tudes Snodgrass and Heller, Proc. Wash. Acad. Sci., vol. 6, Jan. 31, 1905, p. 345 (Tagus Cove, Albemarle I., Galapagos Is.).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 23 (compiled); Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 495 (reference).

and not extended; second dorsal spine 3 in fish without caudal; first dorsal ray 1 3/5 in head, last ray 1 1/2; A. 8 (figure shows but 6.); first ray 4, last ray 1 1/2; least depth of caudal peduncle 5; caudal in male elongate or long as rest of fish, in female 1/3 as long; pectoral 3 3/4 in fish without caudal; ventral 3 1/6.

Body with 4 or 5 irregular dark cross bands and with dark mottlings and light spots. Males with a V-shaped or heart-shaped blackish blotch on throat, on each side of which alternate light and dark longitudinal stripes separated by narrow white lines extending back from apex of lower jaw over gill membranes and to ventral fin. First dorsal dark, with undulating

rdinella melanura (Cuvier).

Clupea melanura Cuvier, Régne Animal, ed. 2, vol. 2, 1829, p. 318

n var. Clupanodon jussieu Lacépède, Hist. Nat. Poiss., vol. 5, 1803, pl. 11,

g. 3, type locality, Tahiti).

Sardinella melanura Fowler, Bishop Mus. Bull., no. 22, 1925, p. 37 (Tahiti);

m. Bishop Mus., vol. 10, 1928, p. 30 (Tahiti; Society Is.; Nukuhiva).

Sardinella atricauda Fowler, Proc. Acad. Nat. Sci. Phila., 1900, p.

9 (Tahiti); 1911, p. 206 (Tahiti material).

Clupea atricauda Günther, Journ. Mus. Godeffroy, vol. 8, pt. 16,

909, p. 387 (Society Is.; Tahiti).

Harengula commersoni Kendall and Goldsborough, Mem. Mus. Comp.,

ool., vol. 26, 1911, p. 244 (Papeete, Tahiti).

oblique white lines and with a small black spot at upper margin just behind second ray. Second dorsal with 3 or 4 rows of oblong dark dots. Anal with blackish band on outer half, which is continued on lower part of caudal. Caudal with several vertical series of oblong dark spots.

Length without caudal 56 mm.

(Regan.)

Persian Gulf, Mekran, Arabia.

rdinella jussieu (Lacépède).

Clupanodon jussieu Lacépède, Hist. Nat. Poiss., vol.5, 1803, pp. 469,

l, pl. 11, fig. 2 (type locality, Mauritius).

Sardinella jussieu Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 30

Nukahiva).

Clupea otaitensis (Solander)Valenciennes, Hist. Nat. Poiss., vol. 20,

847, p. 257 (type locality, Tahiti, by inference)(name only).

Clupea gibbosa Günther, Journ. Mus. Godeffroy, vol. 8, pt. 16, 1909,

381 (Society Is.).

Harengula sundaica Kendall and Goldsborough, Mem. Mus. Comp. Zool.,

ol. 26, 1911, p. 243 (Nukuhiva).

2531

Callionymus phasis Günther

Callionymus phasis Günther, Rep. Voy. Challenger, vol. 1, pt. 6, p. 28, pl. 15 c, 1880 (type locality, Twofold Bay, Australia). — McCulloch, Records Austral. Mus., vol. 14, no. 1, p. 9, Feb. 28, 1923 (Gippsland coast, Victoria, 80 fathoms); Biol. Rep. Endeavour, vol. 4, pt. 4, p. 212, June 8, 1926 (same materials) ~~[illegible]~~; Fish. New South Wales, ed. 3, p. 77, pl. 32, fig. 285 c, 1934. Austral. Mus. Mem., no. 5, pt. 3, p. 338, Nov. 28, 1929 (reference);

depth 5 2/5; head to gill opening 3 1/3, width 1/6 greater than its length. Snout 2 4/5 in head; eye 2 4/5, equals snout, eyes very close set; maxillary reaches opposite front eye edge, length 3 in head; interorbital very narrow, 1/3 in eye, which well embraces upper profile of head; Gill opening small foramen on upper side of neck about level and little before pectoral origin.

Lateral line single.

D. IV — 9, first fin extended, preopercular spine considerably shorter than eye, ending in 3 curved spines, of which 2 anterior larger and directed upwards; first spine 1 in head, fourth spine 1 1/3, first ray 1 1/2, last ray 1 1/2; A. 7, first ray 4 1/4, last ray 1 7/8; least depth of caudal peduncle 5; caudal 2 4/5

mopterus villosus Gilbert.

Etmopterus villosus Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2,

03 (1905), p. 580, pl. 66 (type locality, South coast of Molokai, in 222 to

8 fathoms).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 23 (type); Proc.

rth Pac. Sci. Congr. Java, 1929, p. 496 (reference).

in rest of fish; pectoral 1/8 in head; ventral 1/5.

Reddish white with irregular broad blackish cross bands on back. First dorsal blackish, with some whitish zig-zag lines. Second dorsal variegated with grayish. Other fins white.

Length 100 mm. (Günther.

Australia.

alus suckleyi (Girard).

Spinax (Acanthias) suckleyi Girard, Proc. Acad. Nat. Sci. Phila., 4, p. 196 (type locality, Fort Steilacoom, Puget Sound).

Squalus suckleyi Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 23 Pearl Harbor, Honolulu; off Maui).

Squalus sucklii Fowler, Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 95 (reference).

Squalus mitsukuri Snyder, Bull. U. S. Fish Comm., vol. 22, 1902 1904), p. 515 (Honolulu; off Maui).—Jordan and Evermenn, op. cit., vol. 23, t. 1, 1903 (1905), p. 45, fig. 6 (Kailua).—Gilbert, op. cit., vol. 23, pt. , 1903 (1905), p. 580 (off Maui, in 267 to 283 fathoms).

Acanthias mitsukurii Günther, Journ. Mus. Godeffroy, vol. 9, pt. 17, 910, p. 490 (Hawaii).

2534

Callionymus picturatus Peters

Callionymus picturatus Peters, Monatsb. Akad. Wiss. Berlin, p. 840, 1876 (1877) (type locality, Salawatty, off northwest New Guinea). — Fowler, Mem. Bishop Mus., vol. 10, p. 422, 1928 (copied). — Bleeker, Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 14, p. 97, 1879 (copied).

Head 3 1/4 in total length. Snout pointed; hind edge of upper jaw not reaching below front edge of eye; teeth very small. Gill opening very small, rounded. (Preopercular spine ends in 2 spines and medially above a third spine.)

Lateral line developed.

D. IV I, 8; A. 8; pectoral rays 30 to 32; ventral rays I, 5.

Rose red, with ocellate blotches, medially black with 3 rings as inner ring rose, median black and outer bluish. Scales of upper back smaller

than on belly, 2 behind one another on necks, 4 pair branch to dorsal and 1 on caudal tail. Below large kidney formed ocellus on under part of preopercle; a second at base of each pectoral, 3 large ones ascend each side of anal fin to caudal base held in front by blue cross band. First dorsal with ocellus. Second dorsal and anal black with oblique blue lines. Paired fins clear blue. Ventral black basally.

Length 210 mm. (Peters.)

New Guinea.

assiremus evionthas (Jordan and Bollman).

Ophichthus evionthas Jordan and Bollman, Proc. U. S. Nat. Mus., vol. , 1890, p. 154 (type locality, Hood Island, Galapagos).

Quassiremus evionthas Jordan and Davis, Rep. U. S. Fish Comm., pt. 16, 888 (1892), p. 623 (compiled).—Kendall and Radcliffe, Mem. Mus. Comp. Zool., ol. 35, no. 3, April 1912, p. 81 (Wreck Bay, Chatham I., Galapagos).

2536

Calliomymus rameus Mc Culloch

Calliomymus (Calliurichthys) rameus Mc Culloch, Biol. Res. Endeavour, vol. 5, pt. 4, p. 201, pl. 53, June 8, 1926 (type locality, Off Cape Capricorn, Queensland, 13 fathoms; 25 miles south-east from Double Island Point, 33 fathoms; 4 - 20 miles north-east of Gloucester Head, 19 - 35 fathoms); Austral. Mus. Mem., no. 5, pt. 3, p. 339, Nov. 28, 1929 (reference).

Anchoviella purpurea (Fowler).

Stolephorus purpureus Fowler, Proc. Acad. Nat. Sci. Phila., 1900, p. 497, pl. 19, fig. 1 (type locality, Hawaiian Islands).—Jordan and Jordan, Mem. Carnegie Mus., vol. 10, no. 1, 1922, p. 8 (Hawaii).

Anchovia purpurea Jenkins, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 432 (Honolulu).—Snyder, op. cit., vol. 22, 1902 (1904), p. 521 (Honolulu).—Jordan and Evermann, op. cit., vol. 23, pt. 1, 1903 (1905), p. 60 fig. 12 (Honolulu; Hilo; Kailua).—Fowler, Proc. Acad. Nat. Sci. Phila., 1911, p. 214 (types; Hawaiian Is.); Copeia, no. 112, Nov. 20, 1922, p. 82 (Hawaiian Is.).

Engraulis purpureus Günther, Journ. Mus. Godeffroy, vol. 8, pt. 16, 1909, p. 78 (Hawaiian Is.).—Fowler, Bishop Mus. Bull., no. 22, 1925, p. 23 (Honolulu); no. 38, 1927, p. 5 (Honolulu); Mem. Bishop Mus., vol. 10, 1928, p. 33 (Honolulu; types; Kahului; Hawaii).

Anchoviella purpurea Jordan and Seale, Bull. Mus. Comp. Zool., vol. 67, no. 11, 1926, p. 403 (Oahu; Honolulu).—Fowler, Mem. Bishop Mus., vol. 11 no. 6, 1934, p. 387 (reference).

2537

Callionymus richardsonii Bleeker

Callionymus richardsonii Bleeker, Nat. Tijdk. Ned. Indie, vol. 6, p. 444, 1854 (type locality, Nagasaki); Verh. Batavia. Genoot. (Japan), vol. 26, p. 111, 1857 (reference); Act. Soc. Sci. Ind. Neerl. (Jap.), vol. 3, p. 19, 1858 (reference); Verh. Kon. Akad. Wet. Amsterdam (Jap.), vol. 18, p. 18, 1879 (reference). — Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 23, p. 370, 1900 (Tokyo).

Callionymus richardsoni Jordan and Snyder, Annot. Zool. Japon., vol. 3, p. 111, 1901 (~~Joga~~ reference). — Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, no. 2, p. 317, June 27, 1925 (Tokyo; Yokohama; Kobe; Toba; Mikawa Bay; Tokyo). — Tanaka, Journ. Faculty Sci. Imp. Tokyo, Sect. 4, Zool., vol. 3, pt. 1, p. 40, Nov. 4, 1931 (reference). Schmidt, Trans. Pacific Comm. Acad. Sci. U.S.S.R., p. 143, 193 (Nagasaki; Misaki).

Muraena celebesensis (Kaup).

Anguilla celebesensis Kaup, Cat. Apod. Fish, 1856, p. 42, fig. 31 (type locality, Celebes). —Weber, Zool. Jahrb. Suppl., Festschr., vol. 15, vol. 15, sect. 1, 1912, p. 585, figs. c and f (Mangareva; Austral Is.; Marquesas; Tahiti; Raiatea).

Muraena celebensis Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 36 (Tahiti; Papeete).

Anguilla otaheitensis Kaup, Abhandl. Geb. Nat. Hamburg, vol. 4, 18[illegible] p. 17, pl. 2, fig. 2 (type locality, Tahiti).—Günther, Rep. Voy. Challenger vol. 1, pt. 6, 1880, p. 58 (Lake Waihirra, Tahiti).—Kendall and Goldsborough Mem. Mus. Comp. Zool., vol. 26, 1911, p. 244 (Papeete).

Anguilla marmorata Kner, Reise Novara, Fische, vol. 1, pt. 5, 1865 p. 369 (Tahiti).

Anguilla aneitensis Günther, Rep. Voy. Challenger, vol. 1, pt. 6, 1880, p. 58 (Lake Waihirra, Tahiti); Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 391 (Tahiti).

Callionymus reevesii ~~Rich~~ (part Richardson), Zool. Voy. Sulphur, Fishes, p. 60, pl. 36, fig. 4, 1844 (China Seas); Schth. China and Japan, p. 210, 1846.

Callionymus curvicornis (not Valenciennes) (Günther, Cat. Fish. Brit. Mus., vol. 3, p. 145, 1861 (part). — Ishikawa and Matsmura, Prelim. Cat. Fish. Mus. Tokyo, p. 37, 1897. — Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 23, p. 370, 1900 (Yokohama).

Halosauropsis verticalis Gilbert.

Halosauropsis verticalis Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 611 (type locality, Near Kauai, in 437 to 632 fathoms; off Bird Island, in 313 to 800 fathoms). —Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 35 (Hawaii).

Aldrovandia verticalis Gilbert, op. cit. pl. 75 (error).

(not Schlegel) 2539

Callionymus valenciennesi, Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 25, p. 950, fig. 6, 1903 (Hakodate; Matsushima; Misaki; Yokohama; Tokyo; Enoshima; Tsuruga; Wakanoura; Owomichi; Kobe; Kawatana; Nagasaki). — Jordan and Metz, Mem. Carnegie Mus., vol. 6, no. 1, p. 58, fig. 59, June 1913 (Busan). — Jordan and Thompson, Mem. Carnegie Mus., vol. 6, no. 4, p. 293, Sep. 1914 (Misaki; Shimonoseki). — Tanaka, Jap. Fish. Life Colours, no. 337, 1933..

2540

Callionymus rubrovinctus Gilbert

Callionymus rubrovinctus Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, p. 650, fig. 252, 1903 (1905) (type locality, Between Maui and Lanai, in 28 to 43 fathoms; off Molokai, in 23 to 43 fathoms). — Fowler, Mem. Bishop Mus., vol. 10, p. 422, 1928 (copied).

Depth 5 4/5; head to hind tip of preopercular spine 3. Snout 5 3/5 in head; eye 3 1/8, subequal with snout, greatly exceeds interorbital; maxillary reaching little past front of eye; mouth little inclined; interorbital space very narrow; preopercular spine long as eye, robust, tip curved upward as slender hook, and 2 stronger hooked spines on upper edge; no antrorse basal anterior denticle.

Gill opening before first dorsal, below beginning of lateral line.

Lateral line single, little arched at first, reaches caudal base at upper third its depth.

D. IV — 8, I; first spine long filament reaching 7/8 to caudal base, first ray 2 4/7 in head measured to distal tip of preopercular spine, sixth ray 1 5/6; A. 8, I; first ray 3 7/8; last ray 2; caudal 1 1/8, little convex behind; least depth of caudal peduncle 3 2/3; pectoral 1 1/2, rays 17; ventral 1 1/6.

In life back with 4 bright red bars extending nearly to middle of sides; first bar broad on neck and first dorsal; second broader, under first half of second dorsal; third less half wide as second, under last dorsal rays; fourth on caudal peduncle, wider. Lower half of

sides with 4 irregular brownish black blotches, each forming downward extension of one of red bands; anterior blotch very small, second largest, and spaces between blotches pearly white; dark blotch in middle of lower caudal rays and smaller one near tips of rays, and 2 very narrow blue bands near middle of fin. Anal blacks. Small black spot in axil of ventral.

Upper surface of head, including upper half of eye, but not snout, reddish; lower surface whitish. Dorsals uniform whitish.

Hawaiian Islands.

U. S. N. M., no. 51580. Channel between Maui and Lanai Islands. In 28 to 43 fathoms. U. S. Fish Comm. Length 24 mm. Type.

Callionymus sagitta Pallas

Callionymus sagitta Pallas, Spicilegia Zool., vol. 8, p. 29, pl. 4, figs. 4-5, 1770 (type locality, Amboyna). — Bonnaterre, Tabl. Ichth., p. 44, pl. 27, fig. 96, 1788 (copied). — Gmelin, Syst. Nat. Linnaeus, pt. 1, p. 1155, 1789 (copied). — Walbaum, Artedi Pisc., vol. 3, p. 609, 1792 (copied). — Forster, Fauna Indica, p. 14, 1795 (reference). — Lacepède, Hist. Nat. Poiss., vol. 2, pp. 327, 337, 1800 (copied). — Schneider, Syst. Ichth. Bloch, p. 40, 1801 (copied). — Valenciennes, Hist. Nat. Poiss., vol. 12, p. (225) 301, 1837 (Pondichery; Bourbon). — Bleeker, Verh. Batavia. Genoot. (Verh. Gob.), vol. 22, p. 3, 1849 (name); Nat. Tijds. Ned. Indie, vol. 1, p. 38, 1851 (Batavia); vol. 3, p. 412, 1852 (Borneo); vol. 3, p. 445, 1852 (Banka); Verh. Batavia. Genoot. (Bengal. Verh.), vol. 25, p. 52, 1853 (reference); Act. Soc. Sci. Indo-

Raia poecilura Shaw, General Zool., vol. 5, 1804, p. 291 (on Tenkee nsul Russell, Fishes of Coromandel, vol. 1, 1803, p. 4, pl. 6, type locality, zagapatam).

Pteroplatea poecilura Fowler, Proc. Fourth Pac. Sci. Congr. Java, 29, p. 506 (Society Islands).

Gymnura poecilura Fowler, Mem. Bishop Mus., vol. 11, no. 6, 1934, p. 6 (reference).

Callionymus sagitta Pallas

Callionymus sagitta Pallas, Spicilegia, Zool., vol. 8, p. 29, pl. 4, figs. 4-5, 1770 (type locality, Amboyna L. — Valenciennes, Hist. Nat. Poiss., vol. 12, p. 364, 1837; Heerl. (Borneo), vol. 8, p. 16, 1860 (Borneo); (Celebes) vol. 8, p. 43, 1860 (Celebes).

— Day, Fishes of India, pt. 2, p. 322, pl. 68, fig. 5 (female) 1876 (Madras). — Bleeker, Fermesz. Füzetek, Budapest, vol. 5, p. 168, 1881, (Singapore). (1882)

(— Day, Fauna British India, Fishes, vol. 2, p. 304, 1889.

— Günther, Cat. Fish. Brit. Mus., vol. 3, p. 146, 1861 (Bengal Bay; Madras; East Indies). — Bleeker, Verslag. Kon. Akad. Wet. Amsterdam, vol. 12, p. 32, 1861 (Singapore); — Karoli, Ned. Tijds. Dierk., vol. 2, p. 292, 1865 (Amboina); Bech. Faune Madagascar, Pollen et Van Dam, pt. 4, Poiss.; p. 76, 1875 (reference); Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 14, p. 90, 1879.)

2545

— Jordan and Richardson, Bull. Bur. Fisher., vol. 27, p. 283, 1908 (Manila); Philippine Journ. Sci., p. 55, 1910 (reference). — Borodin, Bull. Vanderbilt Mar. Inst., vol. 1, art. 2, p. 61, 1930 (Manila Bay). — Herre, Fisher Herre 1931 Philippine Exped., p. 94, 1934 (Manila). — Rojas and Martin, Depart. Agric. Comm. Manila, Techn. Bull. 6, p. 240, 1937 (reference). — Fowler, ~~Cat~~ List Fish. Malaya, p. 222, 1937 (reference).

(— Weber, Siboga Exped., vol. 57, Fische, p. 523, 1913 (Bima; Macassar).

Callionymus serrato-spinosus Gray, Illustrat. Ind. Zool. Hardwicke, vol. 2, pl. 90, fig. 3, a-b, 1833-34 (type locality, India).

Depth 8 to 9; head to end of preopercle spine 3 to 3 1/2. Snout convex; eye 3 to 4 in head, greater than interorbital; maxillary well protractile; preopercular spine not or little longer than eye, well curved, with small antrorse outer basal spine, armed with 4 or 5 strong unequal divergent denticles. Gill opening superior well before first dorsal origin.

Lateral line distinct, with nuchal intersection.

D. IV—10, first dorsal more than 4 times less than second fin, not to little longer than eye, lower than body depth, in male usually slightly higher than in female, spines not free; second dorsal not to rather higher than body depth; A. 10, subequal with second dorsal, edges of membranes

Letharchus pacificus Osburn and Nichols.

Letharchus pacificus Osburn and Nichols, Bull. Amer. Mus. Nat. Hist. vol. , , p. (type locality, --Fowler, Proc. [illegible] vol. 80, art. 6, 1932, p. 3 (Gardner Bay, Hood I., Galapagos).

between rays deeply notched; caudal not much less than head, truncate convex; pectoral I, 18 or I, 19, rhomboid, shorter than head; ventral rays I, 5, not or rather shorter than pectoral.

Body above olivaceous, with irregular, crowded pale green, rose or yellowish ocelli, under surfaces yellow or pearly. Iris greenish, edge of pupil silvery or golden. First dorsal of male yellow ~~(below or rose hyaline above)~~ ~~and dusky~~ below, above blackish brown and posteriorly deep black. in female nearly or entirely black. In both sexes soft dorsal and pectorals paler above, usually variegated with deep rose. Caudal pale violaceous with yellow ocelli and often variegated with small pale brownish spots. Anal yellow or white, - other fins yellowish

Myrichthys maculosus (Cuvier).

Muraena maculosa Cuvier, Régne Animal, vol. 2, 1817, p. 232 (on Ophi
surus ophis, part, Lacépède, Hist. Nat. Poiss., vol. 2, 1800, pp. 195, 196,
pl. 6, fig. 2, type locality, European Seas).

Ophichthys maculosus Schmeltz, Cat. Mus. Godeffroy, no. 7, 1879, p.
(Tahiti).—Günther, Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 40 (Tahit
Hawaiian Is.).

Myrichthys maculosus Fowler and Ball, Bishop Mus. Bull., no. 26, 192
p. 6 (Johnston I.).—Fowler, Bishop Mus. Bull., no. 38, 1927, p. 5 (Washingto
and Howland Is.); Mem. Bishop Mus., vol. 10, 1928, p. p. 43 (~~type of Ophichth~~
~~stypurus;~~ Honolulu; ~~Johnston I.;~~ type of Pisoodonophis magnifica;Hawaii); vo
11, no. 5, 1931,p. 316 (reference); Proc. U.S. Nat. Mus., vol. 80, art. 6,
1932, p. 3 (Narborough I., Galapagos).

Pisoodonophis magnifica Abbott, Proc. Acad. Nat. Sci. Phila., 1860,
476 (type locality, Hawaiian Islands).

Myrichthys magnificus Fowler, Proc. Acad. Nat. Sci. Phila., 1900, p.
494, pl. 18, fig. 3 (type); 1912, p. 16 (type; remarks).

golden to pale violaceous. In male anal membrane brown or blackish, in female all white or yellow.

Length 48 to 112 mm. (Bleeker.)

Bourbon, Mascarene Islands, India, Malaya, East Indies, Philippines.

Myrichthys colubrinus (Boddaert).

Muraena colubrina Boddaert, Neue Nordische Beytr., vol. 2, 1781, p. 56, pl. 2, fig. 3 (type locality, Amboyna).

Ophichthys colubrina Günther, Journ. Mus. Godeffroy, vol. 9, pt. 17 1910, p. 40 (Society Is.).

Myrichthys colubrinus Fowler and Ball, Bishop Mus. Bull., no. 26, 1925, p. 5 (Johnston Island).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 42 fig. 10 (Palmyra I.; Society Is.).

Ophisurus fasciatus Kner, Reise Novara, Fische, vol. 1, pt. 5, 1865, p. 379 (Tahiti).

2549

Callionymus schaapii Bleeker

Callionymus schaapii Bleeker, Nat. Tijds. Ned. Indie, vol. 3, p. 455, 1852 (type locality, Banka); Verslag. Akad. Wet. Amsterdam, ser. 2, vol. 14, p. 94, 1879 (Singapore, Banka; Java).

— Günther, Cat. Fish. Brit. Mus., vol. 3, p. 148, 1861 (copied).

Depth 8 to 9; head to end of preopercular spine 4. Snout convex, eye 3 1/2 in head, greater than interorbital; maxillary well protractile; preopercular spine not shorter than eye, well curved, small antrorse basal tooth in front, hind edge with 4 to 6 unequal strong denticles bent in and antrorse; interorbital concave, 3 in eye. Gill opening elevated, well

before dorsal.

Lateral line distinct, with transverse intersection.

D. IV–V 10, first dorsal more than twice shorter than second dorsal but much higher, in males 3 anterior spines prolonged to reach caudal; second dorsal little elevated, not emarginate, last 2 rays much longer in males; female with caudal obtusely rounded not or little longer than head, in male much longer than head, acutely rounded to lanceolate; paired fins subequal with to shorter than head; pectoral rays I, 17 to I, 19, rhomboid; ventral I, 5, Anal papilla in A. 10, like second dorsal, last ray longer in male;

both sexes slender and conic.

Body above olivaceous, sides partly ~~coffee~~ marbled with pale rose

Ahlia egmontis (Jordan).

Myrophis egmontis Jordan, Proc. Acad. Nat. Sci. Phila., 1884, p. 44 (type locality, Egmont Key, Florida).

Ahlia egmontis Jordan and Davis, Rep. U. S. Fish Comm., pt. 16, 1888 (1892), p. 639 (type).—Jordan and Evermann, Bull. U.S. Nat. Mus., no. 47, pt 1, 1896, p. 370 (copied); pt. 4, 1900, pl. 60, fig. 158 (type).

Achlia egmontis Borodin, Bull. Vanderbilt Mar. Mus., vol. 1, art. 1, 1928, p. 9 (Galapagos) (a questionable record, the generic name wrongly spelle

or pearly ocelli. Iris greenish, pupil edge golden. Membranes of fins rose or pale violet hyaline, rays yellowish or golden. Soft dorsal, pectoral and caudal with all upper rays deeply variegated with golden. Pectoral with large brown blotch on anterior part of base. Anal and ventral below with brownish margin.

Length 61 to 102 mm. (Bleeker.

East Indies.

Stemonidium hypomelas Gilbert.

Stemonidium hypomelas Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 1903 (1905), p. 586, pl. [illegible]67 (Type locality, Near Niihau Island, in 537 to 67 fathoms).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 42 (copied).

Callionymus spiniceps Regan

Callionymus spiniceps Regan, Trans. Linn. Soc. London, ser. 2, vol. 12, Zool., p. 249, pl. 30, fig. 4, May 1908 (type locality, Amirante, Seychelles Group, over 30 fathoms).

Depth 7 1/4; head to gill opening 3 3/4. Snout 3 3/4 in head; eye 3, equals snout, eyes subcontiguous; maxillary reaches 2/3 to eye, length 4 1/3 in head; preopercular spine straight, more than 1/2 length of head, both edges serrated - and outer antrorse extension at base; preorbitals with serrated edges and with additional series of serrae; prefrontals denticulated; supraorbital

Eulamia commersonii (Blainville).

Carcharias commersonii Blainville, Bull. Soc. Philom. Paris, vol. 8, 1816, p. 121 (name only); Fauna Français, Poiss., 1830, p. 90 (on Lacépède).

Eulamia commersonii Fowler, Bishop Mus. Bull., No. 26, 1925, p. 4 (Kaui; Nihoa); No. 38, 1927, p. 3 (Jarvis I.); Mem. Bishop Mus. ~~Honolulu~~, vol. 10, 1928, p. 20 (Honolulu; types of Carcharias insularum and C. nesiotes); Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 493 (reference).

Squalus carcharias (not Linnaeus) Lacépède, Hist. Nat. Poiss., vol.1, 1798, p. 169, pl. 8, fig. (type locality, none given).

Squalus (Carcharias) maou Lesson, Voy. Coquille, Zool., vol. 2, pt.1, 1830, p. 91, pl. 1 (type locality, Society Islands).

Eulamia maou Fowler, Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 493 (reference).

Carcharias insularum Snyder, Bull. U. S. Fish Comm., vol. 22, 1902 (1904), p. 513, pl. 1, fig. 1 (type locality, Off Diamond Head; between Molokai and Oahu).

Carcharias nesiotes Jordan and Evermann, op. cit., vol. 23, pt. 1, 1903 (1905), p. 40, pl. 3, fig. 2 (Honolulu).

ridges serrated, ending posteriorly in 2 or 3 spines; occipital region rugose, with 2 pairs of spines. Gill opening small, superior.

Lateral line single.

D. IV — 8, I, first spine in male produced in long filament or 1 2/3 in fish without caudal, third spine 1 1/3 in head, first ray 1 1/3, last ray 1 1/3; A. 8, I, first ray 2 7/8, last ray 1 1/3; least depth of caudal peduncle 5; caudal in male elongate, 1 3/5 in rest of fish; pectoral 1 1/3 in head, rays about 12; ventral rays I, 5, fin 2 7/8 in fish without caudal.

Head and upper part of body with small dark spots. Large black blotch on upper part of membrane between third and fourth dorsal spines. Second

Eulamia munsing (Bleeker).

Carcharias (Prionodon) munsing Bleeker, Verh. Batav. Genoot. (Madura), vol. 22, 1849, p. 16 (type locality, Madura Straits near Kammal and Surabaya).

Eulamia munsing Fowler, Occas. Pap. Bishop Mus. ~~Honolulu~~, vol. 8, No. 7, 1923, p. 375 (Honolulu); Mem . Bishop Mus. ~~Honolulu~~, vol. 10, 1928, p. 21, fig. 6 (Honolulu); Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 493 (reference).

2554

dorsal with 3 or 4 series of oblong dark spots. Caudal with dark cross bars. Outer half of anal blackish.

Length 154 mm. (Here.)

Indian Ocean.

Eulamia cerdale (Jordan and Evermann).

Carcharhinus cerdale (Gilbert) Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 3, 1898, p. 2746 (type loclaity, Panama).

Carcharinus cerdale Herre, Field Mus. Publ., No. 353, Zool. ser. vol 21, April 15, 1936, p. 22 (N. 6 18 Lat. W. 84 14 Long.; Tagus Cove, Albemarl I. and South Seymour I., Galapagos Is.).

Callionymus valenciennei Schlegel

Callionymus valenciennei Schlegel, Fauna Japonica, Pois., fts. 7-9, p. 153, pl. 78, fig. 3, 1845 (type locality, Nagasaki, Japan). — Bleeker, Verh. Batavia Genoot. (Jap.), vol. 25, p. 45, 1853 (reference). — Jordan and Hubbs, Mem. Carnegie Inst., vol. 10, no. 2, p. 317, June 27, 1925 (Kobe; Toba). —

Callionymus valenciennesi Bleeker, Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 3, p. 238, 1869 (Japan). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 374, fig. 333, 1913 (reference). — ~~Jordan~~ McCulloch, Records Australian Inst., vol. 14, no. 1, p. 9, Feb. 28, 1923 (Japan). — Anonymous, Illustr. Jap. Aquat. Pl. Animals, vol. 1, pl. 48, figs. 2-3, 1931. — Tanaka, ~~Jap. Fish. Life~~ Colours, no. 237, 1933. Journ. Faculty Sci. Univ. Tokyo, Sect. 4 Zool., vol. 3, pt. 1, p. 40, Nov. 4, 1931 (reference);

— ~~Jordan~~ proof

...longa (Garman).

Trygon longa Garman, Bull. Mus. Comp. Zool., vol. 6, 1880, p. 170 ...pe locality, Acapulco, Mexico; Panama).

Dasyatis longa Snodgrass and Heller, Proc. Wash. Acad. Sci., vol. 6, ...n. 31, 1905, p. 345 (Mangrove Point, Narboro, Galapagos Is.).

Dasyatis longus Fowler, Proc. Fourth Pac. Sci. Congr. Java, 1929, p. ...5 (reference).

2556

Callionymus valenciennesi Bleeker,
Verh. Kon. Akad. Wet. Amsterdam,
(Jap.), vol. 18, p. 18, 1879 (reference)
(error).

Elops hawaiensis Regan.

Elops hawaiensis Regan, Ann. Mag. Nat. Hist., ser. 8, vol. 3, 1909, p. 39 (type locality, Hawaiian Islands).—Günther, Journ. Mus. Godeffroy, vol 8, pt. 16, 1910, p. 286 (Hawaii).—Fowler, Proc. Acad. Nat. Sci. Phila., 1911 p. 204 (Honolulu); Mem. Bishop Mus., vol. 10, 1928, p. 26 (Honolulu; Hilo); vol. 11, No. 5, 1931, p. 314 (Honolulu).

Elops hawaiiensis Fowler, Copeia, no. 112, Nov. 20, 1922, p. 82 (Hawaii); Bishop Mus. Bull., no. 22, 1925, p. 23 (Honolulu).

Elops saurus (not Linnaeus) Fowler, Proc. Acad. Nat. Sci. Phila., 1900, p.496 (Hawaiian Islands).—Steindachner, Denkschr. Akad. Wiss. Wien, vo 70, 1901, p. 513 (Honolulu).—Jenkins, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 432 (Honolulu).—Jordan and Evermann, op. cit., vol. 23, pt. 1, 1903 (1905), p. 53 (Honolulu).

2557

Callionymus valenciennei Schlegel

Callionymus valenciennei Schlegel, Fauna Japonica, Poiss., pt. 7–9, p. 153, pl. 78, fig. 3, 1845 (type locality, Nagasaki, Japan).—Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 25, p. 950, fig. 6, 1903 (Hakodate, Matushima, Misaki, Yokohama, Tokyo, Enoshima, Tsuga, Wakamura, Onomichi, Kobe, Kawatana, Nagasaki).—Jordan and Snyder, Mem. Carnegie Mus., vol. 4, no. 1, p. 58, fig. 59, 1913 (Kusaie).—Anonymous, Illustr. Jap. Aquat. Pl. Animals, vol. pl. 48, figs. 2–3, 1931.—Tanaka, Jap. Fish. Life Colours, no. 337, 1933.—Mc Culloch, Rec. Austral. Mus., vol. 14, no. 1, p. 9, Feb. 28, 1923 (Japan).

Callionymus valenciennei Callionymus valenciennei

Callionymus valenciennei Franz, Abhandl. Kon. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, p. 84, 1910 (Sagami Bay; Aburatsubo).—Jordan and Thompson, Mem. Carnegie Mus., vol. 6, no. 4, p. 293, pl. 1914 (Misaki, Yokohama).

Callionymus japonicus (not Houttuyn) Valenciennes, Hist. Nat. Poiss., vol. 12, p. 299, 1837 (Japan). — Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 22, p. 370, 1900 (Yokohama).

Callionymus simplicicornis Valenciennes, op. cit., p. 303, 1837 (type locality, Guam). — Günther, Cat. Fish. Brit. Mus., vol. 3, p. 149, 1861 (compiled).

Callionymus reevesi (part) Richardson, Voy. Sulphur, Fish., p. 60, pl. 36, 1844 (female; on drawing made in Canton, not type).

Callionymus punctatus Richardson, Ichth. China and Japan, p. 210, 1846 (on Callionymus japonicus Valenciennes).

2559

Callionymus richardsoni Bleeker, Nat. Tijds. Ned. Indie, vol. 6, p. 414, 1854 (type locality, Nagasaki); Verh. Batavia. Genoot. (Japan.), vol. 26, p. 111, 1857 (reference); Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 23, p. 370, 1900 (Tokyo); Rimol. Zool. Japan., vol. 3, p. 111, 1901 (Nagasaki).

Callionymus curvicornis (not Valenciennes) Günther, Cat. Fish. Brit. Mus., vol. 3, p. 145, 1861 (China). — Ishikawa and Matsuura, Cat. Fish. Mus. Tokyo, p. 37, 1897. — Jordan and Snyder, Proc. U. S. Nat. Mus., vol. , p. 370, 1900 (Yokohama).

Ret. Soc. Sci. Ind. Neerl. (Jap.), vol. 3, p. 19, 1878 (reference); Verh. Kon. Akad. Wet. Amsterdam (Jap.), vol. 18, p. 13, 1879 (reference).

2560

Callionymus flagris Jordan and Fowler

Callionymus flagris Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 25, p. 952, fig. 7, 1903 (type locality, Tsuruga, Tokyo; Aomori; Kobe; Nagasaki; Owari Bay; Matsushima Bay; Tsuruga Bay). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 376, fig. 335, 1913 (reference).

Callionichthys flagris Franz, Abhandl. Kon. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, p. 84, 1910 (Nagami Bay).

Callionymus japonicus (not Houttuyn) Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 22, p. 370, 1900 (Yokohama).

2561

Callionymus variegatus Schlegel

Callionymus variegatus Schlegel, Fauna Japonica, Poiss., pt. 7-9, p. 153, 1845 (type locality, Japan). — Bleeker, Verh. Kon. Akad. Wet. Amsterdam (Jap.), vol. 18, p. 18, 1879 (reference).

Callionichthys variegatus Fowler, Proc. U. S. Nat. Mus., vol. 25, p. 944, fig. 3, 1903 (Nagasaki). — Franz, Abhandl. Kon. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, p. 183, 1910 (Japan). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 373, fig. 331, 1913 (Reference).

2562

Callionymus virgis Jordan and Fowler

Callionymus virgis Jordan and Fowler, Proc. U. S. Nat. Mus., vol. 25, p. 957, ~~1903~~ fig. 9, 1903 (type locality, Misaki). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 376, fig. 336, 1913 (reference).

Callionichthys virgis Franz, Abhandl. Kon. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, p. 83, 1910 (Misaki).

2563

Callionymus xanthosemion (Fowler)

Callionichthys xanthosemion Fowler,
Bull. Bishop Mus., No. 22, p. 18, 1925
(type locality, Guam); Mem.
Bishop Mus., vol. 10, ~~#2~~ p. 422,
fig. 67, 1928 (type).

2564

Callionymus zaspilus Herre

Callionymus zaspilus Herre, Copeia, no. 1, p. 24, 1933 (type locality, Sitankai); Fishes Herre 1931 Philippine Exped., p. 94, 1934 (Sitankai). — Royas and Martin, Departm. Agric. Comm. Manila, Tech. Bull. 6, p. 240, 1937 (reference).

Depth 3 2/3; head trifle over 3, width 8/9 its length. Snout 3 in head, eye 2 3/5; interorbital 3 3/4; preopercular spine 2 7/10; with 2 small slightly curved spines on its upper margin and ends in a slender slightly curved point.

D. IV — 8, first spine 2 1/4 in head, sixth ray 1 4/5; A. I — 7, eighth ray. 8/9 of head; pectoral rays 24, fan 1 1/2 in head; ventral 8/9 of head, not reaching anal; least depth of caudal peduncle 1 4/5 in head; caudal 2 95/100 in length.

Ground color gray, in life light blue, with spots of indigo blue. Fins and adjacent part of body marked by large complicated circular blue spots or bands formed by fusion of such spots, each spot outlined by a heavy white line, outside of which a broad indigo blue stripe, then another white stripe and lastly a thin blackish line. Large circular spot on belly and caudal small spots of caudal head on head, each with 4 bordering also. Basal portion of caudal with broad blue transverse bands, likewise margined on both sides by 4 stripes. Iris silvery golden, with 6 to 7 black margined radiating grey stripes over outer part of eye, like spokes of a wheel; 2 extend to and cross interorbital; 2 others descend to throat.

Length 28 mm. (Here.)

Vitanki. Near Calliomymus splendidus Here from Tau-i-Tau.

The following incompletely noticed and doubtful species appears to have long remained unnoticed:

Callionymus taeniatus Gill

Callionymus taeniatus Gill, Proc. Acad. Nat. Sci. Philadelphia, April 1859, p. 129 (type locality, China).

Lilac colored, with a silvery line and row of spots on the sides, and with a black spot, bordered by white, on the first dorsal. (Gill.

China.

The original reference to Callionymus kaneboshi Tanaka I have not located.

2566

Genus Paracallionymus Barnard

Paracallionymus Barnard, Ann. South African Mus., vol. 21, pt. 2, p. 448, Oct. 1927. (Type Callionymus costatus Boulenger, monotypic.)

Body elongate, slender. Head moderate. Gill opening reduced to a small foramen opening dorsally. Preopercular spine short, simple, sharply pointed, without any denticles or serrations and without antrorse spine at its base. Mouth and teeth of head smooth. Lateral line single, with many transverse or vertical extensions both above and below, upper longer than those below. First dorsal in male elevated, spine ends extending far beyond membrane. Caudal lanceolate, moderate.

Pectoral short. Ventral without detached rays.

A single species in South Africa, remarkable for its simple or jointed lateral line as well as the simple pointed preopercular spine.

Nematoprora polygonifera Gilbert.

Nematoprora polygonifera Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 587, fig. 234 (type locality, Bird Island, in 313 to 800 fathoms).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 42 (compiled).

2568

Paracallionymus costatus (Boulenger)

Callionymus costatus Boulenger, Marine Investig. South Africa, vol. 1, p. 9, 1898 (type locality, In trawl 11 miles off Cape St. Blaize, 40 fathoms). — Thompson, Marine Biol. Rep. South Africa, vol. 4, p. 143, 1918 (South Africa). — Gilchrist and Von Bonde, Fisher. Mar. Surv. South Africa, Special Rep. No. 7, p. 21, 1924.

Paracallionymus costatus Barnard, Ann. South African Mus., vol. 21, pt. 2, p. 449, pl. 19, fig. 3, Oct. 1927 (West coast, Cape Point, False Bay, Agulhas Banks, East London, in 30 to 250 fathoms).

depth 7 1/3; head ~~3 3/4 to 3 4/5~~ 4; snout 2 7/8 in head; eye 2 2/3, greater than snout, eyes narrowly separated; maxillary reaches below front edge of eye, length 3 1/4 in head; preopercular spine 3 in eye, curved, single point. Gill opening before first dorsal.

Lateral line with 33 to 35 vertical extensions above, 25 to 29 below; each superior branch with very short accessory projections posteriorly, each of which ends in fore; each inferior branch opens directly by fore at its lower end.

D. IV, 9 or 10, two first basally contiguous in male, well separated in female; first male elevated, tip of spine extended as filament for beyond membrane, second and third spines longest, reach caudal base, first 1 3/4 length of

Muraenichthys schultzei Bleeker, Nat. Tyds. Ned. Indie, vol. 13, 185 p. 366 (type locality, Karangbollong, South Java).—Fowler and Ball, Bishop Mus. Bull., no. 26, 1925, p. 5 (Johnston I.).—Fowler, Mem. Bishop Mus., vol 10, 1928, p. 41 (Johnston I.).

second, fourth 1/2 length of first and slightly longer than head; first dorsal in female low, first spine longest, nearly 2 in head, other spines graduated, last soft dorsal ray in male reaching caudal base; first dorsal ray in male 1 1/8 in head; A. 9, last ray 1 1/10; least depth of caudal peduncle 6; caudal lanceolate, in female long as space between snout tip and pectoral base, in male half as long again or 2 1/8 in rest of fish; pectoral 1 3/7 in head; ventral 1 1/10.

Color as preserved brownish or grayish, speckled with darker dots and irregular spots, latter mainly along sides, above and below lateral line. Spinous and soft dorsals in male pale, spinous dorsal in female black

Muraenichthys cookei Fowler.

Muraenichthys cookei Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 41, fig. 9 (type locality, Milaelahana, Oahua, Hawaiian Islands).

with white stripe along second dorsal spine, soft dorsal with narrow black margin. Anal in both sexes light with dark margin; tips of rays white. Caudal unspotted. Inner ventral rays dusky.

Length to 150 mm., male and female. (Barnard.)

South Africa, 30 to 250 fathoms.

Metopomycter denticulatus Gilbert.

Metopomycter denticulatus Gilbert, Bull. U. S. Fish Comm., vol. 23, 2, 1903 (1905), p. 585, fig. 233 (type locality, Near Kauai, in 409 to 550 fathoms).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 40 (copied).

Genus Synchiropus Gill

Synchirophus Gill, Proc. Acad. Nat. Sci. Philadelphia, vol. 11, p. 125, 1859. Type Callionymus lateralis Richardson.

Calymmichthys Jordan and Thompson, Mem. Carnegie Mus., vol. 6, no. 4, p. 296, Sep. 1914. (Type Calymmichthys xenicus Jordan and Thompson, orthotypic.)

2573

Synchiropus altivelis Regan

Synchiropus altivelis Regan,
Trans. Linn. Soc. London, ser. 2, vol.
12, Zool., p. 249, pl. 30, fig. 2, May
1908 (type locality, Seychelles
Group, in 44 fathoms).

Depth 6; head to gill opening 3 1/2.
Snout 4 7/8 in head; eye 3 7/8,
greater than snout, separated
by distinct interspace; maxillary
reaches 1/5 in eye, length 4 in
head; eye entering upper profile
of head; preorbicular spine
strongly curved upwards and
inwards at tip and with 2
tooth like extensions on its
upper edge.

Lateral line simple.

D. IV — 8, I, first dorsal

Galeocerdo arcticus (Faber).

Squalus arcticus Faber, Nat. Fische Islands, 1829, p. 17 (type locality, Iceland).

Galeocerdo arcticus Fowler, Mem. Bishop Mus. ~~Honolulu~~, vol. 10, 1928 p. 19, fig. 5 (Honolulu; Nihoa); Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 490 (reference).

Galeocerdo tigrinus Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 27, 1904, p. 940 (Oahu).—Jordan and Evermann, Bull. U. S. Fish Comm., vol. 23 pt. 1, 1903 (1905), p. 36 (Honolulu).—Snodgrass and Heller, Proc. Wash. Acad. Sci., vol. 6, Jan. 31, 1905, p. 342 (Tagus Cove; Straits between Albemarle and Narboro).—Günther, Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 483 (Hawaii).

elevated but with spines scarcely extended, first spine 2 1/8 in fisk to caudal base, first ray 2 1/3 in head, last ray 2 1/10; A. 7, I, first ray 4 1/5, last ray 2; least depth of caudal peduncle 5 1/5; caudal 1 1/3, convex behind; pectoral 1 1/2, rays 19; ventral rays I, 5, fin 1 1/3 in head.

Spinous dorsal with rounded or oval spots. Soft dorsal and anal dark colored posteriorly. Caudal with 2 narrow cross bars. Pectoral with few spots near margin. Ventral with linear vermiculations and dark lower edge.

Length 58 mm.

Indian Ocean. Allied with Callionymus lineolatus, (Regan) differing in form of preopercular spine

Sphyrna zygaena (Linnaeus).

Squalus zygaena Linnaeus, Syst. Nat., ed. 10, pt. 1, 1758, p. 234 (type locality, Europe; America).

Sphyrna zygaena Jenkins, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 420 (Honolulu).—Snyder, op. cit., vol. 22, 1902 (1904), p. 515 (Molokai).—Jordan and Evermann, op. cit., vol. 23, pt. 1, 1903 (1905), p. 41 (Honolulu).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 22 (Honolulu; Fanning I.); Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 494 (reference); Mem. Bishop Mus., vol. 11, no. 6, 1934, p. 386 (Hawaii).

Zygaena zygaena Günther, Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910 p. 484 (Hawaiian Is.).

Zygaena malleus Günther, Rep. Voy. Challenger, vol. 1, pt. 6, 1880, pp. 58, 59 (Honolulu).

~~Lynchiropus~~
~~Callionymus~~ goramensis (Bleeker) 2575

Callionymus goramensis Bleeber, Nat. Tijds. Ned. Indie, vol. 15, p. 214, 1858 (type locality, Goram Island).

— Günther, Cat. Fish. Brit. Mus., vol. 3, p. 149, 1861 (copied).

Lynchiropus goramensis Bleeber, Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 14, p. 101, 1879 (Goram).

depth 8; head 4; longer than broad. Snout with convex profile; eye 3, very closely set; preopercular spine longer than eye, with small external antrorse basal spine in front, inner margin of main spine with 5 or 6 large curved denticles. Gill opening above hind part of opercle.

Lateral line with transverse intersection at nape, and along side of body with cutaneous keel.

D. IV – 10, first dorsal twice as high anteriorly, ~~spines not free~~, first spine elongate and free filament terminally, others not extended, second dorsal higher than body depth, rays simple, 2 posterior much longer than others; A. 8, like second dorsal, edges of membranes between rays deeply emarginate; caudal irregularly

uliodus dentatus Garman.

Chauliodus dentatus Garman, Mem. Mus. Comp. Zool., vol. 24, 1890, p.

(type locality, Society Islands).--Fowler, Mem. Bishop Mus., vol. 10, 1928,

34 (type).

rhomboid, acutely or obtusely rounded behind, longer than head; pectoral rays II, 12, I or II, 13, I, irregularly fan like, not or rather longer than head; ventral I, 5, longer than head. Anal papilla, conic, elongate.

Body rose above, below rose white. Iris rose, edge of orbit golden. Snout and cheeks with narrow, curved, silvery bands. Body above with irregular rose white spots, below sparsely many silvery spots. Dorsals hyaline, with numerous pale blue spots, spinous fin with violaceous reticulations above. Caudal membrane golden rose, with spots or short, narrow bluish bands, diminish below, where 5 or 6 transverse series of brown spots. Paired fins and anal pale rose-golden, with numerous oblong dots or small spots of bluish, and sparingly small violaceous spots. Anal edge white, with diffuse intramarginal brownish violaceous band.

Length 64 to 68 mm.
East Indies.

(Bleeker.

stronesthes lucifer Gilbert.

Astronesthes lucifer Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 903 (1905), p. 605, pl. 71, fig. 3 (type locality, Off Kauai, in 1021 athoms; off Oahu, in 257 to 294 fathoms).—Fowler, Mem. Bishop Mus., vol. 0, 1928, p. 34 (compiled).

2578

Synchiropus leopoldi Giltay

Synchiropus leopoldi Giltay, Mém. Mus. Roy. Hist. Nat. Belg., hors-sér., vol. 5, fasc. 3, p. 83, figs. 23 (preopercular spine) and 24, April 30, 1933. (type locality, Between Banda Neira and Goenoeng Api).

Said to be near Synchiropus splendidus Herre, differing in the form of the preopercular spine and coloration; thus dorsal with broad black border above.

Length 26 mm.

Argyripnus ephippiatus Gilbert and Cramer, Proc. U. S. Nat. Mus., v

19, 1897, p. 414, pl. 39, fig. 2 (type locality, N.21° 12' Lat. W.157° 49' Long.

in 295 fathoms).—Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905

p. 601 (off Maui; Oahu; in 216 to 283 fathoms).—Fowler, Mem. Bishop Mus.,

vol. 10, 1928, p. 35 (compiled).

2579

Lynchiropus lili Jordan and Veale

Lynchiropus lili Jordan and Veale, Bull. Bur. Fisher., vol. 25, p. 415, pl. 53, fig. 2, 1905 (1906) (type locality, Apia). — Fowler, Mem. Bishop Mus., vol. 10, p. 423, 1928 (copied). — Giltay, Mém. Mus. Roy. Hist. Nat. Belg., 3ème sér., vol. 5, fasc. 3, p. 84, April 30, 1933 (reference).

2560

Synchiropus lineolatus (Valenciennes)

Callionymus lineolatus Valenciennes, Hist. Nat. Poiss., vol. 12, p. 307, 1837 (229) (type locality, Pondicherry).
— Günther, Cat. Fish. Brit. Mus., vol. 3, p. 149, 1861 (Madras; type of C. lateralis Val.).
— Bleeker, Reich. Fauna Madagascar, Poiss., p. 76, 1875 (reference).
— Day, Fishes of India, pt. 4, p. 323, pl. 67, fig. 3, 1876 (Madras; reference).
Peters, Monatsb. Akad. Wiss. Berlin, p. 841, 1877 (1877) (Bougainville I., in 40 fathoms).
— Jordan, Madras Journ. Lit. Sci., 1885, p. 142.
— Bleeker, Verh. Batavia. Genoot. (Bengal. Hand.), vol. 25, p. 52, 1853 (reference).
— Day, Fauna British India, Fishes, vol. 2, p. 305, fig. 101, 1889.
Synchiropus lineolatus Fowler, Mem. Bishop Mus., vol. 10, p. 423, 1928 (compiled).
Gill, Proc. Acad. Nat. Sci. Philadelphia, April 1859, p. 130 (reference).
— Tanaka, Journ. Faculty Sci. Univ. Tokyo, Sect. 4, vol. 3, pt. 1, p. 40, Nov. 4, 1931 (reference).
— Giltay, Mém. Mus. Roy. Hist. Nat. Belg., sér. 3, vol. 5, fasc. 3, p. 84, April 30, 1933 (reference).

Synchiropus ijimae Jordan.

2581

Callionymus lateralis Richardson, Zool. Voy. Sulphur, Fish., p. 65, pl. 37, figs. 3–6, 1844 (type locality, "Pacific Ocean"). — Fowler, Hong Kong Nat., vol. 2, no. 3, p. 309, Sep. 1931 (note).

Synchiropus lateralis Gill, Proc. Acad. Nat. Sci. Philadelphia, April 1859, p. 129 (~~reference~~). Hong Kong.

Synchiropus ijimai Jordan and Thompson, Mem. Carnegie Mus., vol. 6, no. 4, p. 295, pl. 36, fig. 1, Sep. 1914 (type locality, Misaki).

depth 4 4/5 to 5; head measured to gill opening 3 4/5 to 4, width 1 1/10. Snout 4 to 4 1/4 in head; eye 4 to 4 1/4, subequal with snout, 1 2/5 to 1 3/5 times interorbital; mouth cleft short, reaches 1/4 in eye, length 3 1/8 to 3 1/4 in head; lower jaw shorter than upper or included; front of jaws with short wide patch of very fine or minute vomerine teeth, that in lower jaw larger area; interorbital narrow, low, concave; preopercle spine 1 1/5 times eye as measured along its inner edge, which furnished with 2 large erect denticles. Gill opening about half eye diameter, lateral.

Skin smooth. Lateral line high, distinct; complete. Rather

broad rugose striate area each side of occiput.

D. IV – 8, I, spines flexible, third 1 1/3 = to 1 4/5 in head to gill opening, first ray 1 1/4 to 1 2/5, eighth ray 1 1/2; A. 7, I, seventh ray 1 1/3 to 1 7/8; caudal 2 3/4 to 2 4/5 in rest of fish; least depth of caudal peduncle 3 1/8 to 3 1/4 in head; pectoral 1; ventral 3 1/8 in fish without caudal or 1 1/10 in head.

Drab above, under surfaces whitish. Four broad gray black transverse blotches or bars, not meeting on under surface of body. Narrow dark brown bar across interorbital. Behind eye broad pale gray transverse band, forms obtuse angle at hind part of interorbital. First dark body band at spinous dorsal,

second and third from soft dorsal and fourth on caudal peduncle before caudal base. All these bars variable, with paler markings and on side of body and flanks reticulated to form close set large rounded grayish white spots. Dark blotch below eye. Few gray white spots on side of head. Last membrane of spinous dorsal with large, black, white edged ocellus. Other spinous dorsal membranes terminally with some large white spots margined darker and fin clouded gray and white. In larger od female specimen spinous dorsal clouded gray white, without ocelli and soft dorsal similar, only clouding more contrasted. In male soft dorsal gray to whitish, each

2585

membrane with several large dark gray to gray black blotches. Anal gray, fin blackish terminally, in male crossed by 2 longitudinal gray lines. Caudal whitish, with 2 dark gray transverse median bars. Pectoral gray, spotted with dark gray and fin marked with many, close set white dots medially. Ventral whitish basally, terminally dark gray, edge white all around. Prepectoral and supraventral region reticulated with gray, leaving large variable whitish blotches.

India, Melanesia, China.

Bourbon,

2586

A. h. V. P., ~~one~~ three examples.
Hong Kong, China. dr. G. A. C.
~~Holotype~~. Length 75 to 113 mm.

2587

Synchiropus microps (Günther)

Callionymus microps Günther, Journ. Mus. Godeffroy, vol. 6, pt. 11, p. 192, pl. 113, fig. C, 1877 (type locality, Tonga Islands). — Mc Culloch, Austral. Mus. Mem., No. 5, pt. 3, p. 339, Nov. 28, 1929 (Queensland).

Synchiropus microps Fowler, Mem. Bishop Mus., vol. 10, p. 423, 1928 (copied). — Giltay, Mém. Mus. Roy. Hist. Nat. Belg., 4me sér., vol. 5, fasc. 3, p. 84, April 30, 1933 (reference).

Depth 5; head ~~to~~ gill opening 3 3/4, width 1 1/5 times head length. Snout 3 1/2 in head; eye 5 1/4, 1 1/4 in snout, 1 2/5 in interorbital; preopercle ends in 2 hooked spines; interorbital 3 1/2. Gill opening rather close before first dorsal origin.

Lateral line distinct.

D. IV — 8, third spine 1 9/10 in head, first dorsal ray 1 2/5, penultimate ray 1 1/8; A. 7, first ray 3 1/8, penultimate ray 1 1/2; caudal 1, convex behind; least depth of caudal peduncle 2 1/4 in head; pectoral 1 1/5, rays 14; ventral rays I, 5, fin 2 0/2 in fish without caudal.

Body and fins dark brown, marbled with gray and white. First dorsal entirely black. Pectoral brown, with white dots.

Length 77 mm.

Polynesia.

(Günther.)

Ariosoma bowersi (Jenkins).

Congrellus bowersi Jenkins, Bull. U. S. Fish Comm., vol. 22, 1902 (1903), p. 422, fig. (type locality, Honolulu).—Snyder, op. cit., vol. 22, 1902 (1904), p. 515 (Honolulu).—Jordan and Evermann, op. cit., vol. 23, pt. 1, 1903 (1905), p. 77, fig. 16 (Hilo; Honolulu).—Fowler, Proc. Acad. Nat. Sci. Phila., 1912, p. 11 (Honolulu).

Congermuraena bowersii Fowler, Copeia, no. 112, Nov. 20, 1922, p.82 (Hawaii).

Ariosoma bowersi Fowler, Bishop Mus. Bull., no. 22, 1925, p. 23 (Honolulu); Mem. Bishop Mus., vol. 11, no. 6, 1934, p. 388 (Hawaii).

Conger bowersi Fowler, Bishop Mus. Bull., no. 38, 1927, p. 5 (Honolulu); Mem. Bishop Mus., vol. 10, 1928, p. 29, pl. I D (Honolulu).

2589

Synchiropus ocellatus (Pallas)

Callionymus ocellatus Pallas, Spicilegia Zool., vol. 8, p. 25, pl. 4, figs. 1–3, 1770 (type locality, Amboina). — Bonnaterre, Tabl. Ichth., p. 43, pl. 27, fig. 95, 1788 (copied). — Gmelin, Syst. Nat. Linnaeus, pt. 1, p. 1154, 1789 (copied). — Walbaum, Artedi Pisc., vol. 3, p. 608, 1792 (copied). — Forster, Fauna Indica, p. 14, 1795 (reference). — Schneider, Syst. Ichth. Bloch, p. 40, 1801 (copied). — Valenciennes, Hist. Nat. Poiss., vol. 12, p. (231) 309, 1837 (copied). — Bleeker, Verh. Batavia Genoot. (Blenn. Gob.), vol. 22, p. 3, 1849 (name); Nat. Tijdk. Ned. Indië, vol. 8, p. 422, 1855 (Amboina); vol. 15, p. 201, 1858 (Goram); Act. Soc. Sci. Ind. Neerl. (Celebes), vol. 8, p. 42 (Celebes).

— Günther, Cat. Fish. Brit. Mus., vol. 150, 1861 (compiled). — Bleeker, Nat. Tijds. Dierk., vol. 1, p. 236, 1863 (Ternate); p. 271 (Timor); Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 14, p. 98, 1879 (Celebes; Timor; Ternate; Kwandang; Gorom).

— Weber, Siboga Exped., vol. 57, Fische, p. 524, 1913 (Beo; Kabaena I.; Ambon; Nusa Laut; Timor).

Callionymus simplicicornis Valenciennes, Hist. Nat. Poiss., vol. 12, p. 226, 1837 (type locality, Guam) — Günther, Cat. Fish. Brit. Mus., vol. 3, p. 149, 1861 (copied).

Synchiropus ocellatus Jordan and Richardson, Bull. Bur. Fisher., vol. 27, p. 282, 1907 (1908) (Calayan); Philippine Journ. Sci., p. 55, 1910 (reference). — Herre, Journ. Pan-Pac. Res. Inst., vol. 8, no. 4, p. 11, 1933 (Dumaguete); Fishes Herre 1931 Philippine Exped., p. 94, 1934 (Dumaguete). — Rojas and Marten, Departm. Agric. Comm. Manila, Techn. Bull. 6, p. 240, 1937 (reference).

Gill, Proc. Acad. Nat. Sci. Philadelphia, April 1859, p. 130 (reference).

— Giltay, Mém. Mus. Roy. Hist. Nat. Belg., hors sér., vol. 5, fasc. 3, p. 84, April 30, 1933 (reference).

Callionymus punctulatus Lacepède, Hist. Nat. Poiss., vol. 2, pp. 328, 340, 1800 (type locality, No locality).

Synchiropus marmoratus (Peters)

Callionymus marmoratus Peters, Archiv Naturg., p. 255, 1855 (type locality, — Günther, Cat. Fish. Brit. Mus., vol. 3, p. 150, 1861 (Mozambique).

Callionymus perelegans Bianco,.

Depth 5 to 5 1/2; head to hind end of preopercle spine 3 or less to 3 1/2. Snout convex; eye 3 in head, greater than interorbital; upper jaw well protractile; preopercular spine shorter than eye, well curved, front base unarmed, 2 large divergent spines behind; interorbital less than 1/3 of eye. Gill opening above opercle, somewhat before first dorsal.

Lateral line distinct on trunk, with transverse nuchal intersection.

D. IV — 9, female with first dorsal = lower than body depth, more than twice less than second dorsal, spines decrease to last twice or more than twice shorter; in young males and old females body and second dorsal less much higher; second dorsal less than double shorter; spines with membranes broadly united and

Conger wilsoni (Schneider).

Gymnothorax wilsoni Schneider, Syst. Ichth. Bloch, 1801, p. 529 (type locality, New Holland).

Conger wilsoni Fowler, Occas. Pap. Bishop Mus., vol. 8, no. 7, 1923 p. 375 (Honolulu); Mem. Bishop Mus., vol. 10, 1928, p. 38, pl. I C (Honolulu

well divergent, median longer than others, anterior rather shorter; soft dorsal not or rather lower than body depth, hind rays not longer than others; C. 8, like second dorsal; caudal not or rather longer than head, obtuse, convex, rays not extended; pectoral I, 18 or II, 19, rhomboid, shorter than head; ventral rays I, 5.

Head and sides and upper surface of body golden-olive with irregular pale ridge spots, frequently partly joined or formed by irregular transverse bands. Sides of head and trunk below and posteriorly with deep blue ringed spots. Head below and belly white or rose pearly. Iris golden; frequently spotted with blackish. First dorsal of female entirely deep brown anteriorly without ocelli; in male ray or

Conger cinereus Rüppell.

Conger cinereus Rüppell, Atlas Reise Nördl. Afrika, Fische, 1828, p. 115, pl. 20, fig. 1 (type locality, Red Sea).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 37 (Honolulu; Christmas I.; Society Is.).

Conger marginatus (Valenciennes) Eydoux and Souleyet, Voy. Bonite, Zool., vol. 1, 1841, p. 201, pl. 9, fig. 1 (type locality, Hawaiian Islands).—Günther, Rep. Voy. Challenger, vol. 1, pt. 6, 1880, p. 61 (Honolulu); Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 393 (Hawaiian Is.).—Fowler, Copeia no. 112, Nov. 20, 1922, p. 82 (Hawaii).

Leptocephalus marginatus Jordan and Evermann, Bull. U. S. Fish Com. vol. 23, pt. 1, 1903 (1905), p. 76 (Hilo; Kailua).—Fowler, Proc. Acad. Nat. Sci. Phila., 1912, p. 29 (Christmas I.; Hawaiian Is.).

purplish, below 2 or 3 oblique undulating brown bands edged blue, between ~~upper 3~~ anterior 3 spines above & ~~ocelli~~ longitudinal series of purple brown ocelli, center black and ringed doubly blue and violet marginally, membrane above and behind ocelli and brown bands everywhere handsome waved blue band edged with violet. Other fins of both sexes without distinctive color. Second dorsal, caudal and pectoral rose or golden, variegated with brown spots; brown of dorsal frequently in oblique bands. Caudal with 3 and pectoral with 3 to 5 transverse bands. Anal and ventral brownish yellow, or white edged. Ventral often with spot anteriorly and median transverse band of yellow or rose. Paired fins with blue dots basally. Anal in males with oblique blue streaks, frequently interrupted by 2 longitudinal inclined bands.

Length 32 to 62 mm. (Bleeker.)

East Indies, Philippines.

MUROENESOCIDAE

Muroenesox talabonoides (Bleeker).

Conger talabonoides Bleeker, Verh. Batavia.Genoot. (Muraenoid.),vol 25, 1853, p. 20 (type locality, Batavia, Java).

Muraenesox talabonoides Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 37 (type of Rhechias armiger).

Muroenesox talabonoides Fowler, op. cit., vol. 11, no. 6, 1934, p. 388 (reference).

Rhechias armiger Jordan, Proc. U. S. Nat. Mus., vol. 59, 1921, p. 644, fig. 1 (type locality, Hawaii).

2595

Synchiropus ornatus Fowler

Synchiropus ornatus Fowler, Hong Kong Nat., vol. 2, no. 3, p. 308, text fig. 12, Sep. 1931 (type locality, Hong Kong).

2596

Synchiropus sechellensis Regan

Synchiropus sechellensis Regan, Trans. Linn. Soc. London, Ser. 2, vol. 12, Zool., p. 249, pl. 30, fig. 1, May 1908 (type locality, Seychelles Group, in 37 fathoms).

Depth 4 3/4; head to gill opening 2 3/4. Snout 4 1/8 in head; eye 2 7/8, greatly exceed snout, separated by distinct interspace; maxillary reaches 2/5 in eye, length 3 2/5 in head; eye centering upper profile of head, preopercular spine strongly curved upward and inward at tip and with 2 tooth-like extensions on its upper edge. Gill opening lateral, in front of upper part of pectoral base.

Eulamia platyrhynchus Gilbert.

Eulamia (Platypodon) platyrhynchus Gilbert, Proc. U. S. Nat. Mus., vol. 14, 1891, p. 543 (type locality, Clarion Island; Soccoro Island, Magdalena Bay, Lower California).

Carcharias platyrhynchus Snodgrass and Heller, Proc. Wash. Acad. Sci., vol. 6, Jan. 31, 1905, p. 344 (Clarion I.; Clipperton I.).

Carcharinus platyrhynchus Herre, Field Mus. Publ., No. 353, Zool. ser.vol. 21, April 15, 1936, p. 23 (Tagus Cove, Albemarle I., Galapagos Is.; Cocos I.).

2597

Lateral line single.

D. IV - 8, I, first dorsal on small elevated and pointed produced, rapidly decreasing in length from first-which is much longer than head or 2 in fork without caudal, last spine 2 7/8 in head; first ray 1 2/3, last ray 1 3/4; A. 7, I; first ray 3 1/8, last ray 1 9/10; least depth of caudal peduncle 3 1/4; caudal 1 1/6, convex behind; ~~least depth of caudal peduncle~~ pectoral 1 3/5, rays 16?; ventral rays I, 5, fin 1 1/10 in head.

Head and body with 6 broad reddish cross bars separated by irregular narrow whitish interspaces. Lower parts with white spots or vermiculations. First 2 spines of dorsal and membrane between

Isurus glaucus (Müller and Henle).

Oxyrhina glauca Müller and Henle, Syst. Beschr. Plagiost., 1841, p. 69, pl. 20(type locality, Java).

Isuropsis glauca Jordan and Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 43, fig. 5 (Honolulu).

Isurus glaucus Fowler, Mem. Bishop Mus. ~~Honolulu~~, vol. 10, 1928, p. 18 (Honolulu); Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 488 (reference).

reddish, rest of fin dusky. Second dorsal crossed by 3 or 4 oblique reddish bands and spotted or vermiculated with white. Caudal with 2 reddish cross bars. Outer half of anal blackish. Pectoral pale. Ventral pinks with dusky edges.

Length 55 mm.

(Regan.)

Indian Ocean. Related to Synchiropus lineolatus (Valenciennes), differing in coloration, and the form of the preopercular spine and the first dorsal fin.

Alopias vulpinus (Bonnaterre).

Squalus vulpinus Bonnaterre, Tableau Ichth., 1788, p. 9, pl. 85, fig. 349 (type loclaity, Mediterranean).

Alopias vulpinus Fowler, Mem. Bishop Mus. ~~Honolulu~~, vol. 10, 1928, p. 18, fig. 4 (Honolulu; Fanning is.); Proc. Fourth Pac. Sci. Congr. Java, 1929, p. 488 (reference).

Alopias vulpes Jordan and Snyder, Proc. U. S. Nat. Mus., vol. 27, 1904, p. 939 (Honolulu).—Jordan and Evermann, Bull. U. S. Fish Comm., vol. 23 pt. 1, 1903 (1905), p. 42, fig. 4 (Honolulu).

Polychirotes gamburgeni Ad.

D. IV, C a - 7

Depth 5 1/2 - head 3 7/10

Eye 4; snout 3; interorb. = 1/10

Prec. with single small spine directed backward & 2 small spines on interior side and 2 slightly larger spines directed forward on its outer side

1st D. - spine prolonged, 2 1/10 in fish without caudal, other gradually shorter.

C. = 1 1/3 times head.

Brown, mottled with black & pale blue. 1st D. brown - in lower half, black on upper half, & long yellow spot on membrane, & between 2nd & 3rd spines, 2 between 3rd & 4th: C. - yellowish, with 3 longitudinal rows of bright blue dots.

1909

F

Callicymus

new species

2599

Synchiropus splendidus (Herre)

Callionymus splendidus Herre, Philippine Journ. Sci., vol. 32, p. 416, 1927 (type locality, Bungau). — (Mc Culloch, Mem. Austral. Mus., 20.5, pt. 3, p. 337, Nov. 28, 1929 (reference). — Royas and Martin, Departm. Agric. Comm. Manila, Techn. Bull. 6, p. 240, 1937 (reference).

Whitley, Records Austral. Mus., vol. 16, no. 4, p. 222, pl. 17, fig. 1, a-b, March 28, 1927. (Queensland): Hayman I. reef, Whitsunday Group, Great Barrier Reef,

Synchiropus splendidus Giltay, Mém. Mus. Roy. Hist. Nat. Belg., 5ème sér., vol. 5, fasc. 3, p. 84, April 30, 1933 (reference).

2600

Lynchiopus yenicus (Jordan and Thompson)

Calymmichthys yenicus Jordan and Thompson, Mem. Carnegie Inst., vol. 6, no. 4, p. 296, pl. 36, fig. 2, Sep. 1914 (type locality, Sagami Bay). — Tanaka, Journ. Faculty Sci. Imp. Tokyo, Sect. 6 Zool., vol. 3, pt. 1, p. 46, Nov. 4, 1931 (reference).

Muraena australis (Richardson).

Anguilla australis Richardson, Proc. Zool. Soc. London, 1841, p. 22 (type locality, Port Arthur, Tasmania, in fresh water).—Weber, Zool. Jahrb. Suppl. Festschr., vol. 15, sec. 1, 1912, p. 593, fig. 4 (Tahiti).

Muraena australis Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 37 (compiled).

Anguilla sidat Kner, Reise Novara, Fische, vol. 1, pt. 5, 1865, p. 368 (Tahiti).

Anguilla virescens Günther, Journ. Mus. Godeffroy, vol. 9, pt. 17, 1910, p. 392 (Tahiti).

2601

Lynchiropus zamboangana Veale

Lynchiropus zamboangana Veale, Philippine Journ. Sci., vol. 4, p. 540, 1909 (type locality, Zamboanga). — Royas and Martin, Departm. Agric. Comm. Manila, Techn. Bull. 6, p. 241, 1937 (reference).

— Giltay, Mém. Mus. Roy. Hist. Nat. Belg., Hors sér., vol. 5, fasc. 3, p. 84, April 30, 1933 (reference).

Genus Eleutherochir Bleeker

Eleutherochir Bleeker, Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 14, p. 103, 1879. (Type Callionymus opercularioides Bleeker, orthotypic.)

Head well depressed. Body smooth. Jaws subequal, upper obliquely protractile. Opercular membrane extended in free, acute lobe. Gill opening broad, semilunar, under opercle. Ventral fins free, not joined with pectorals.

differs from the other genera especially in its even head with straight profile. The gill opening resembles that of Synchiropus, but is larger and hidden under the opercle, which is extended back in a free pointed lobe.

Hypochirophus opercularoides (Bleeker)

Callionymus opercularoides Bleeker, Nat. Tijds. Ned. Indië, vol. 1, p. (30) 32, 1850 (type locality, Padang, Sumatra); — Günther, Cat. Fish. Brit. Mus., vol. 3, p. 151, 1861 (copied).

Act. Soc. Sci. Ind. Neerl. (Achtr. Sumatra), p. 40, Feb. Aug. 1859 (Trussan; Padang; Priaman).

Callionymus opercularioides

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Eleutheronema

~~Synchiropus~~ operculare (Valenciennes)

Callionymus operculare Valenciennes, Hist. Nat. Poiss., vol. 12, p. 305, 1837 (type locality, "l'embouchure de la rivière d'Aviau-Coupan") (128). — Günther, Cat. Fish. Brit. Mus., vol. 3, p. 151, 1861 (copied). — Bleeker, Verh. Batavia, Genoot. (Bengal, Ind.), vol. 25, p. 52, 1853 (reference). — Day, Fishes of India, pt. 2, p. 323, 1876 (Pondicherry; Madras); Fauna British India, Fishes, vol. 2, p. 306, 1889. — Weber, Siboga Exped., vol. 57, Fische, p. 522, 1913 (Menado, Amboina).

Synchiropus operculare Herre, Fishes Herre 1931 Philippine Exped., p. 95, 1934 (Lemery). — Royas and Martin, Departm. Agric. Comm. Manila, Techn. Bull. 6, p. 240, 1937 (reference). Gill, Proc. Acad. Nat. Sci. Philadelphia, April 1858, p. 130 (reference).

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Calliomymus opercularioides Bleeker,
Nat. Tijds. Ned. Indië, vol. 1, p. (30)
32, 1850 (type locality, Padang,
Sumatra); vol. 16, p. 26, 1858-59
(Tibboe); vol. 20, p. 206, 1859-60 (Bali);
Act. Hor. Sci. Ind. Neerl. (Acht.
Sumatra), p. 40, Feb. Aug. 1859
(Trussan; Padang; Priaman). —
Günther, Cat. Fish. Brit. Mus., vol.
3, p. 151, 1861 (copied). — Bleeker,
Verslag. Kon. Akad. Wet. Amsterdam,
vol. 14, p. 110, 1862 (Batjan); Ned.
Tijds. Dierk., vol. 2, p. 191, 1865
(Ceram), p. 292 (Amboina); Verslag.
Kon. Akad. Wet. Amsterdam, ser.
2, vol. 2, p. 272, 1868 (Gnebe).
Synchiropus opercularoides Gill, Proc. Acad.
Nat. Sci. Philadelphia, April 1858, p. 130 (reference).

Eleutherochir opercularioides Bleeker,
Verslag. Kon. Akad. Wet. Amsterdam,
ser. 2, vol. 14, p. 103, 1879 (Sumatra;
Bali; Celebes; Batjan; Ceram;
Amboina; Gnebe).

rumeus micropus (Schlegel).

Clupea micropus Schlegel, Fauna Japonica, Poiss., pts. 10 to 14, 46, p. 236, pl. 107, fig. 2 (type locality, Southeast coast of Japan).

Etrumeus micropus Jenkins, Bull. U. S. Fish Comm., vol. 22, 1902 903), p. 432 (Honolulu).—Snyder, op. cit., vol. 22, 1902 (1904), p. 521 onolulu).—Jordan and Evermann, op. cit., vol. 23, pt. 1, 1903 (1905), p.58 onolulu). —Günther, Journ. Mus. Godeffroy, vol. 8, pt. 16, 1909, p. 385 Hawaiian Is.).—Fowler, Proc. Acad. Nat. Sci. Phila., 1911, p. 205 (Honolulu); ppeia, no. 112, Nov. 20, 1922, p. 82 (Hawaiian Is.); Mem. Bishop Mus., vol. , 1928, p. 29 (Honolulu; Hilo; Oahu).

Depth 6 to 9; head to gill opening 4. Snout strongly depressed; eye 3 to 4 in head, greater to subequal with interorbital; jaws equial; preopercular spine strong, not shorter than eye, outer edge entire, inner edge with 4 or 5 conspicuous teeth, interorbital 1/2 to 1 in eye, level, vertex smooth, each side with broad subradiating crests or rugae.

Lateral line simple, with tranverse nuchal intersection, on sides anteriorly undulated.

D. IV — 10, first dorsal lower than body, twice or more shorter than second dorsal, spines not extended; second dorsal little higher than first dorsal; A. 10, subequal with second dorsal; caudal obtusely convex, not longer than head; pectoral rays I, 22, rhomboid, shorter than head; ventral I, 5. Anal papilla slender, conic, short.

Body above and on sides brownish olive or olive golden, frequently dusted brown, pearly below. Iris greenish, pupil edged golden; dorsal and ventral fins brown, other membranes rose hyaline and rays yellow or golden. dorsal and pectoral rays variegated with brownish.

Length 50 to 86 mm. (Bleeker.

India, East Indies, Philippines.

Serrivomer beanii (Gill and Ryder) Gill, Proc. U. S. Nat. Mus., vol. 6, 1883 (1884), p. 255 (nomen nudum).—Gill and Ryder, op. cit., p. 260 (type locality, N. 41° 40' 30'' Lat. W.65° 28' 30'' Long., in 855 fathoms).—Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 586 (off Oahu; Bird I Kauai; in 311 to 1067 fathoms).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 42 (compiled).

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Genus Dactylopus Gill

Dactylopus Gill, Proc. Acad. Nat. Sci. Philadelphia, vol. 11, p. 130, 1859. (Type Callionymus dactylopus Bennett, monotypic.)

Uulsus Günther, Cat. Fish. Brit. Mus., vol. 3, p. 151, 1861. (Type Callionymus dactylopus Bennett, monotypic.)

Body subcylindrical. ~~Lateral line~~ Head triangular, not depressed. Snout moderate, anteriorly deliverous. Eyes superolateral, well separated. Mouth small, subinferior, upper jaw longer. Lower lip expanded to form small lobe on each side of mandible. Teeth long, slender, slightly recurved anteriorly, short, stouter and hooked laterally.

Preopercular spine well developed, strongly armed above and below. Gill opening moderate, lateral. Lateral line single, superior, straight. Spinous dorsal begins well before gill opening, last spine without membrane, second dorsal high, all rays except first branched. Caudal graduated above, rounded below. Pectoral angular, rays 18, two outer above and below simple. Ventral much longer than pectoral, with I, 1, 4 rays, last longest, spine and outer ray free.

Stolephorus delicatula (Bennett).

Clupea delicatula Bennett, Proc. Comm. Zool. Soc. London, vol. 1, 1831, p. 168 (type locality, Mauritius).

Stolephorus delicatulus Kendall and Goldsborough, Mem. Mus. Comp. Zool., vol. 26, 1911, p. 243 (Rangiroa, Taumotus).—Fowler, Occas. Pap. Bishop Mus.,vol. 8, no. 7, 1923, p. 375 (Honolulu); Mem. Bishop Mus., vol. 10, 1928, p. 29 (Honolulu; Oahu; Rangiroa; Kauai;Hawaii).

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Dactylopus dactylopus (Valenciennes)

Callionymus dactylopus (E. Bennett) Valenciennes, Hist. Nat. Poiss., vol. 12, p. 310, 1837 (type locality, "Cabinet de la Société zoologique de Londres").
— Bleeker, Nat. Tijds. Ned. Indie, vol. 20, pp. 237, 449, 1859-60 (Singapore).
(Nat. Tijds. Ned. Indie, vol. 3, p. 559, 1852 (Amboina); Act. Soc. Sci. Ind. Neerl. (Celebes), vol. 8, p. 42, 1860 (Celebes);

Vulsus dactylopus Günther, Cat. Fish. Brit. Mus., vol. 3, p. 152, 1861 (Amboyna); — Meyer, Anal. Soc. Españ. Hist. Nat. Madrid, vol. 14, p. 31, 1885 (Cebu).

— Martens, Preuss. Exped. Ost Asien, vol. 1, p. 393, 1876 (Amboina).

— Bleeker, Ned. Tijds. Dierk., vol. 1, p. 246, 1863 (Rotti); Verslag. Kon. Akad. Wet. Amsterdam. vol. 16, p. 362, 1864 (Grand Key), p. 365 (Insta Kant); Ned. Tijds. Dierk., vol. 2, p. 149, 1864 (Bouro); p. 191 (Ceram); vol. 2, p. p. 292, 1865 (Amboina); Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 4, p. 105, 1869 (Singapore; Celebes; Rotti; Buru; Amboina; Insta Kant; Great Key).

2610

Dactylopus dactylopus Jordan and Veale, Bull. Bur. Fisher., vol. 26, p. 46, 1906 (1907) (Cavite). — Jordan and Richardson, Philippine Journ. Sci., p. 55, 1910 (reference). — Rojas and Martin, Depart. Agric. Comm. Manila, Techn. Bull. 6, p. 241, 1937 (reference). — Fowler, ~~Cat.~~ List Fish. Malaya, p. 223, 1937 (reference).

— Ogilby, Ann. Queensland Mus., no. 9, p. 38, 1908 (Moreton Bay).

— Ogilby, Proc. Roy. Soc. Queensland, vol. 23, pt. 1, p. 46, 1911 (Moreton Bay).

— McCulloch, Biol. Res. Endeavour, no. 3, pt. 3, p. , 1915 (off Hervey Bay). — McCulloch and Whitley, Mem. Queensland Mus., vol. 8, pt. 2, p. 173, July 7, 1925 (reference). — McCulloch, Austral. Mus. Mem., no. 5, pt. 3, p. 337, nov. 28, 1929 (reference).

Dactylopus bennetti Gill, Proc. Acad. Nat. Sci. Philadelphia, p. 130, 1859 (on Bennett)."

Depth 5 to 6; head 3 1/4 to 3 3/5.
Snout not or little longer than eye; eye 4, greater than interorbital; upper jaw well protractile; preopercular spine little or not longer than eye, little curved; with antrorse outer spinule followed by 3, inner edge with 2 to 4 spinules; interorbital 2/5 to 1/2 in eye. Gill opening behind opercle.

Lateral line distinct.

D. IV—9, first dorsal origin well before gill opening, make with age with extended dorsal spines, free, filamentous, second dorsal with bifurcate rays higher than body depth; D. 8, lower than second dorsal; caudal little to more than twice longer than head, in young males and females oblique truncate or convex, males with age obtuse rhomboid or acutely rhomboid, submedian

rays more or less extended; pectoral rays I, 16, II or I, 17, I or II, 16, I, rhomboid, shorter than head, median bifurcate rays longer than others; ventral I, I, 4, little or not longer than head.

Body with sides and above irregularly marbled with olivaceous rose, or ~~rose~~ brown violaceous, or blackish, below pearly rose or white. Head and sides of trunk frequently with small, unequal, pearly ocelli. First dorsal with black ocellus between third and fourth spines. Second dorsal with longitudinal series of brown spots or streaks, membrane striate between pearly reticulations and cloudings. Anal brownish below, membrane with numerous small deep blue spots and ocelli. Caudal with 3 to 5 oblique transverse bands, paler above. Pectoral with median and upper rays variegated with

brown. Ventral uniform brown or reddish brown, otherwise yellowish rose or golden).

Males with age much greener than females and young males. First dorsal with ocelli brown or black, with many irregular blue rings. Second dorsal with slender brown streaks and larger regular. Caudal with pale transverse bands above, median narrow longitudinal bands silvery, median lower short streaks small oblong spots purple and brown. Anal frequently with numerous waved pale blue lines. Pectoral with median rays spotted with pearly. Ventral frequently with small black ocelli and spots.

Females and young males commonly with single broken ocellate spot between last 2 spines.

Length 78 to 205 mm. (Blache). Malaya, East Indies, Philippines, Queensland.

2614

Genus Amora Gray

Amora Gray, Illustrat. Indian Zoology, vol. 2, pl. 90, fig. 1, 1833-Hardwicke, 1834. (Type, Amora tentaculata Gray, monotypic.)

Anadria Gray, op. cit., directions for arranging the plates. (Type Amora tentaculata Gray.)

Body moderately elongate; little broader than deep. Head large, depressed moderately. Snout rather long. Eye large, elevated but little advanced in head length. Mouth terminally inferior. Above each eye filament, twice eye length. Gill opening behind preopercular spine. First dorsal begins over gill opening, with 4 spines, about high as second dorsal. Second dorsal with 8

Veternio verus Snyder, Bull. U. S. Fish Comm., vol. 22, 1902 (1904), p. 516, pl. 2, fig. 3 (type locality, Honolulu).—Jordan and Evermann, op. ci vol. 23, pt. 1, 1903 (1905), p. 79, pl. 5, fig. 1 (type).—Fowler, Mem. Bisho Mus., vol. 10, 1928, p. 40 (type; Hawaiian Is.).

Veternio verrens Fowler, Mem. Bishop Mus., vol. 11, no. 5, 1931, p. 316 (Waikiki) (error).

rays, last branched. Anal similar, with 7 rays, also last branched. Long caudal about 1½ times head. Paired fins little shorter than head.

This genus, long overlooked, was originally established on the colored figure published and named by Gray as Lamora tentaculata. Bleeker in 1879 appears to have been the last author that accepted it. Though he diagnosed the genus he fails to call attention to any of the specific characters, two of which are of sufficient importance to be readily made out. He mentions that the body is spinulose, and this is better indicated by Gray's figure 1a, giving a dorsal view.

Poeciloconger fasciatus Günther, Proc. Zool. Soc. London, 1871, p. 6

pl. 68 (type locality, Manado, celebes); Journ. Mus. Godeffroy, vol. 9, pt. 1

1910, p. 393 (Tahiti).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 40 (compil

2616

Amora tentaculata Gray

Amora tentaculata Gray, Illustrat. Indian Zoology, Hardwicke, vol. 2, pl. 90, fig. 1, a-b, 1833-34 (type locality, Amboina). — Bleeker, Verslag. Kon. Akad. Wet. Amsterdam, ser. 2, vol. 14, p. 107, 1879 (reference).

Promylantor alcocki Gilbert and Cramer, Proc. U. S. Nat. Mus., vol. 19, 1897, p. 405, pl. 36, fig. 1 (type locality, N. 21° 12' Lat. W.157° 49' Long. in 295 fathoms).—Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905) p. 584 (off Molokai; Pailolo Channel; Oahu; in 238 to 334 fathoms).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 40 (compiled).

2617

Lynchiropus tentaculatus Herre

Lynchiropus tentaculatus Herre, Philippine Journ. Sci., vol. 35, p. 33, pl. 3, 1928 (type locality, Puerto Galera).
— Royas and Martin, departm. Agric. Comm. Manila, Techn. Bull. 6, p. 240, 1937 (reference).

— Giltay, Mém. Mus. Roy. Hist. Nat. Belg., hors sér., vol. 5, fasc. 3, p. 84, April 30, 1933 (reference).

~~Callionymus fimbriatus Herre~~

Callionymus fimbriatus Herre, Copeia, ~~Notes on Fishes in the Zoological Museum of Stanford Un~~ The Fishes of the Herre Philippine Expedition of 1931, p. 94, 1934 (type locality, Litanki Reef).

Depth 5 2/3; head 3 1/5. Snout equals eye, blunt; eye 3, with semi-circular projection of iris extending into upper part of pupil; near hind margin of upper part of eye a simple tentacle; interbital 3 3/4 in eye; preopercular spine 1/2 eye diameter in length, tip bifid, with stout forward-curved hook on its lower or outer side; on occipital region 2 circular roughened bony plates covered with asperities, each 2/3 large as eye.

Short conspicuous cutaneous filaments on body.

D. IV – 8, first spine of low first dorsal. 2 in head; first and second rays highest or 1 2/5. 1/3; A. 7, low, largest rays 1 4/5; pectoral much smaller than ventral, begins beneath first dorsal origin and extends to anal origin, 1 1/3 in head; origin of ventrals beneath head and little behind eye, ventral tip reaching origin of third anal ray – or 2 9/10 in total length.

General color above salmon pink with irregular markings dorsally, lower part of trunk pearly white with irregular spots and reticulations of dusky brown and blackish which extend beneath to anal. Belly white with few scattered brown dots. Iris old rose with metallic sheen, and black spot on its upper posterior part. Two broad dusky bands diverge from lower side of eye to lower edge of preopercle, with narrow band faintly indicated between them. First dorsal old rose. Second

dorsal slightly pink. Anal colorless, with 2 rows of brown spots or rays. Caudal nearly colorless, with 3 transverse brown bands, hardly visible on upper part but well marked on lower half. Pectoral colorless. Upper side of ventral old rose with rows of small circular black spots.

Length 29 mm.

Philippines.

(Herre.)

2618

Genus Draculo Snyder

Draculo Snyder, Proc. Ac. N. Nat. Sci., vol. 40, p. 545, (1912). (Type Draculo mirabilis Snyder, orthotypic.)

Draculus Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 377, 1913. (Type Draculo mirabilis Snyder, orthotypic.)

Body broad, depressed & flattened. Head rather large, depressed, triangular as viewed above. Eye well advanced in head, close set. Mouth small, lower jaw protruding. Lower lip fringed. Teeth very small, in bands in jaws. Top of head smooth. Gill openings very narrow. Gill rakers few, short, well spaced. Pseudobranchiae present. Lateral line present. No first or spinous dorsal. Dorsal with 14 rays. Anal rays 13, first

olyipnus nuttingi Gilbert.

Polyipnus nuttingi Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 903 (1905), p. 609, pl. 73 (type locality, Approach to Pailolo Channel between olokai and Maui, in 297 to 324 fathoms; off Oahu; Kauai; in 216 to 324 fathoms). —Jordan, Proc. U. S. Nat. Mus., vol. 59, 1921, p. 646 (Hawaiian Is.).— owler, Mem. Bishop Mus., vol. 10, 1928, p. 35 (types; Alika, Hawaii).

Polyipnus spinosus (not Günther) Gilbert and Cramer, Proc. U. S. Nat. s., vol. 19, 1897, p. 416 (N.21 9 Lat. W.157 53 Long., in 298 fathoms).

opposite and like dorsal. Caudal small. Pectoral pointed, ends reach beyond front of dorsal and anal. Ventral shorter than pectoral.

One species in Japan; known chiefly by the absence of the first dorsal.

Diplophos pacificus Günther.

Diplophos pacificus Günther, Rep. Voy. Challenger, vol. 31, pt. 2, 1888 (1889), p. 33, pl. 4, fig. B (type locality, N.5° 54' Lat. W.147° 2' Long. north east of Christmas Island).—Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 35 (copied).

2620

Dracula mirabilis Snyder

Dracula mirabilis Snyder, Proc. U.S. Nat. Mus., vol. 40, 1911, p. 545, (1912) (type locality, Sandy beach near Tomakomai in Hokkaido); vol. 42, 1912, p. 447, pl. 61, fig. 2 (type).

Draculus mirabilis Jordan, Tanaka, Snyder, Journ. College Sci. Tokyo, vol. 33, art. 1, p. 377, 1913 (reference).

Argyropelecus heathi Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 1903 (1905), p. 601, pl. 72, fig. 1 (type locality, Kaiwi Channel, between Oahu and Molokai, in 350 to 355 fathoms).—Fowler, Mem. Bishop Mus., vol. 1(1928, p. 35 (Alika, Hawaii).

SMITHSONIAN

U. S. N. M., no. 68243. ~~Kuq~~ Tomakomai in Hokkaido. Bureau of Fisheries. Albatross Collection 1906. Length 35 mm. Type.

Sternoptyx diaphana Hermann.

Sternopteryx diaphana Hermann, Naturforscher, no. 16, 1781, p. 133, pl. 1, figs. 1 to 2 (type locality, none given). —Gilbert and Cramer, Proc. U. S. Nat. Mus., vol. 19, 1897, p. 416 (N.21° 13' Lat. W.157° 30' Long., in 313 fathoms).—Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 609 (off Molokai; Oahu; Kauai; Kaiwai Channel; Bird I.; in 295 to 1594 fathoms —Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 35 (Hawaii).